November 1946

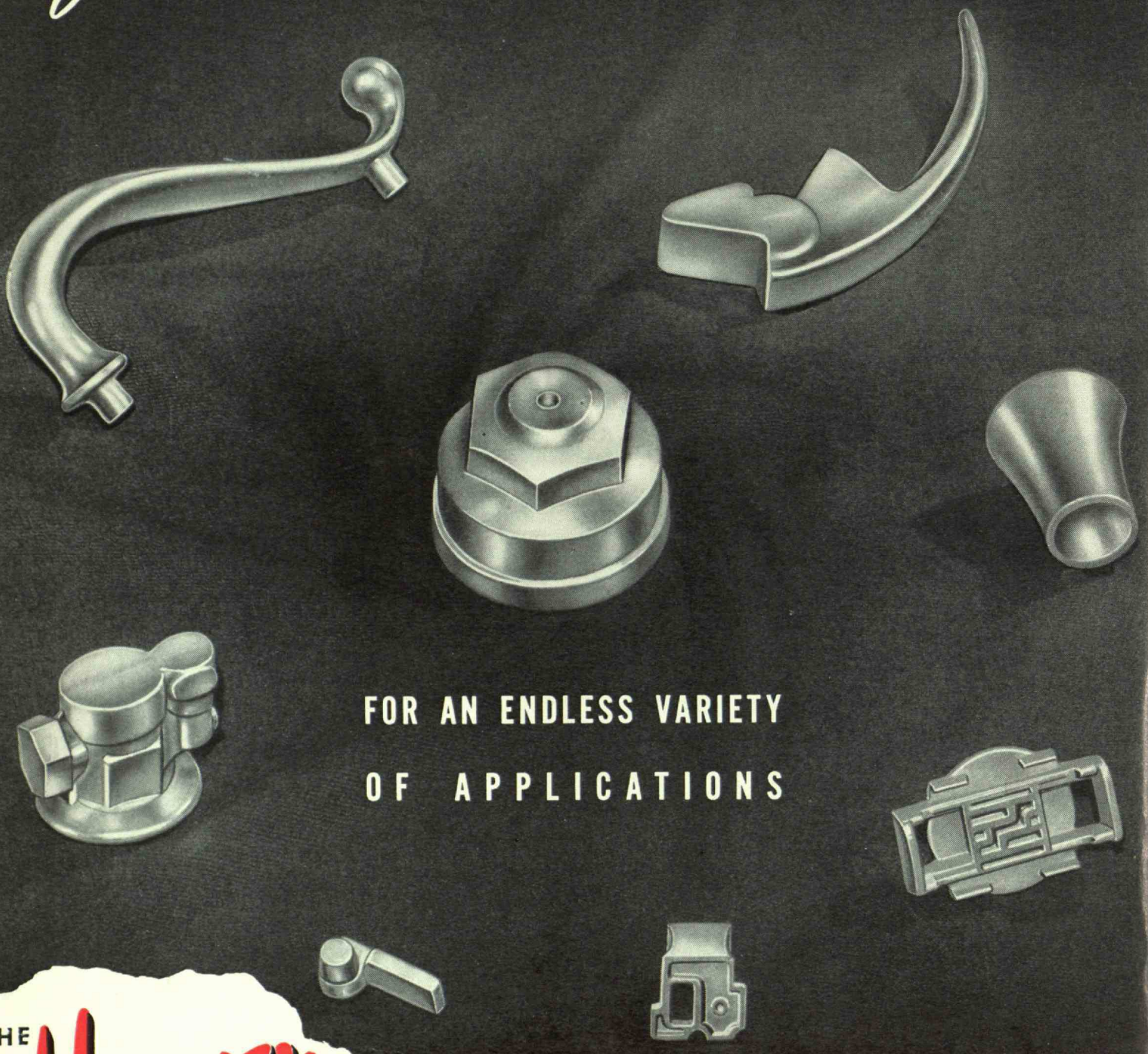
TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office

technology
review
Published by MIT

NON-FERROUS FORGINGS

for STRENGTH • LESS MACHINING • FEWER REJECTS



FOR AN ENDLESS VARIETY

OF APPLICATIONS

THE HARVEY METAL CORPORATION

HAROLD B. HARVEY '05 • *Engineers & Manufacturers* • SHERRY O'BRIEN '17

74th STREET and ASHLAND AVENUE • CHICAGO 36, ILLINOIS

FORGINGS IN ALUMINUM • BRASS • BRONZE • COPPER • MAGNESIUM • MONEL • ALLOYS

MACHINING FACILITIES

The HIDDEN Cost of eye accidents is higher

Bookkeeping records seldom show the *true costs* of eye accidents—merely compensation and medical expense. However, the "hidden" costs* (machinery and work damage, idle time and lowered worker morale, to name but a few) are estimated—by a recognized authority—to be *four times* the amount of the direct cost of eye accidents.

Why not let your nearest A-O Safety Representative show you how much an adequate eye-protection program can save for you.

*Not Insurable

American Optical
COMPANY
Safety Division

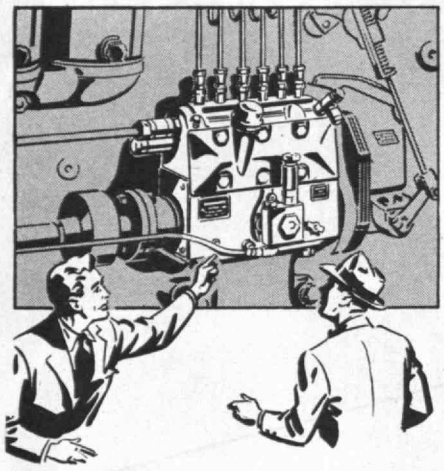
SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

Send for a copy of the latest study of Eye Accident Costs.

THE TECHNOLOGY REVIEW, November, 1946. Vol. XLIX, No. 1. Published monthly from November to July inclusive at 10 Ferry Street, Concord, N. H. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50; Canadian and Foreign subscription $4.00. Entered as second-class matter at the Post Office at Concord, N. H., under the Act of March 3, 1879.

GOOD FUEL INJECTION

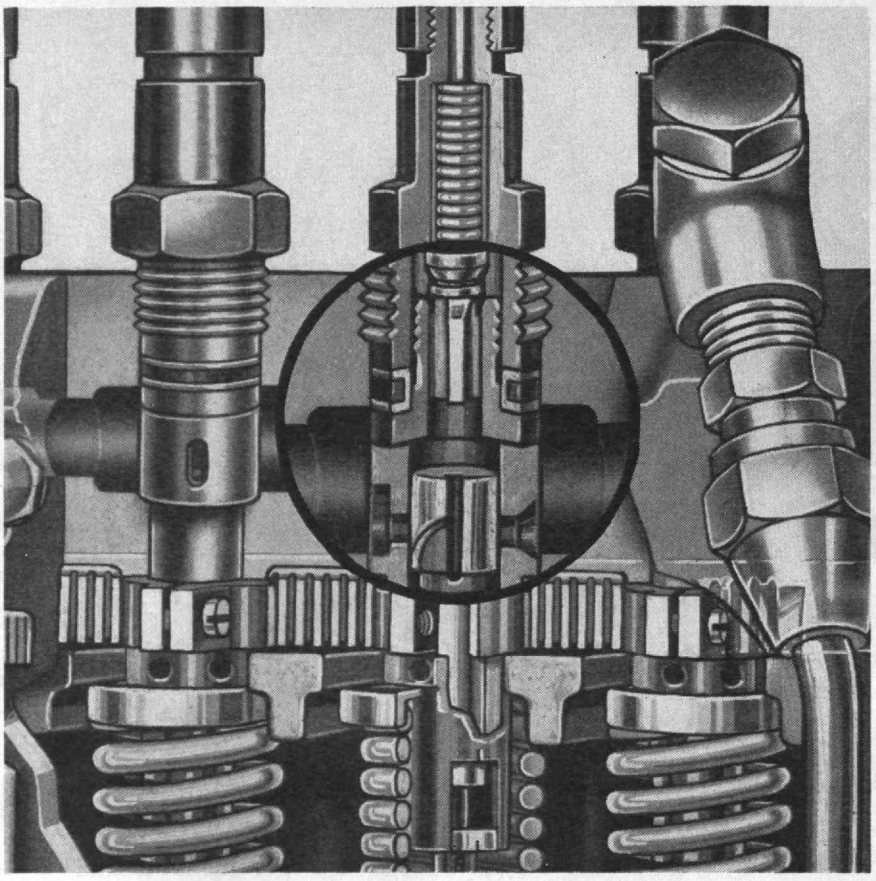
Pays Dividends



"DIVIDENDS?"
"Yes — from better engine performance and lower operation and maintenance costs over long service cycles. That explains why American Bosch Fuel Injection is known the world over as '*good* fuel injection'."

●

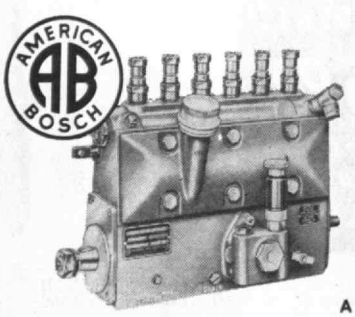
"WHAT MAKES the system good? Accumulated 'know-how' and leadership throughout the years — 'know-how' that follows through even in the smallest part. Here, for example is just one tiny but vital part — the delivery valve. It must be designed and held to exacting tolerances to perform the dual key functions of preventing excessive draining of fuel oil from the line system and controlling the pressure remaining in the system, from pump to nozzle valve, between injection strokes."



"YOU'LL FIND the same values in all other parts of American Bosch Fuel Injection Systems. Yes, *good* fuel injection pays dividends and goes right on paying them."

WRITE FOR A COMPLETE DIRECTORY OF AMERICAN BOSCH AUTHORIZED SERVICE STATIONS

AMERICAN BOSCH CORPORATION, SPRINGFIELD 7, MASS.



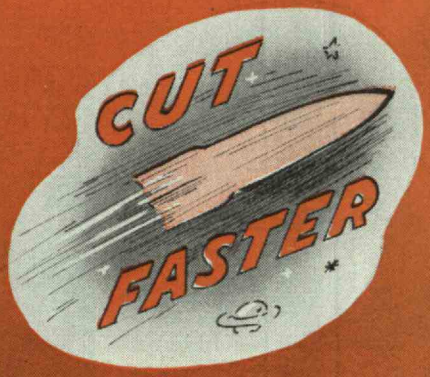
AMERICAN BOSCH

Diesel Fuel Injection

AVIATION AND AUTOMOTIVE ELECTRICAL PRODUCTS • FUEL INJECTION EQUIPMENT

Already a Sensation—

32 Alundum Grinding Wheels



INTRODUCED only a month ago, the new 32 ALUNDUM Grinding Wheels are already making truly sensational records. *And there are definite reasons.*

32 ALUNDUM Wheels are Sharper

By a patented Norton electric furnace process the grains of "32" form as single crystals of correct size — each one with a nubbly surface and many sharp points. And there's no crushing operation to produce flat surfaces. When the grains of 32 ALUNDUM abrasive are bonded into a wheel there are always many sharp points exposed.

There's More Usable Abrasive in 32 ALUNDUM Wheels

32 ALUNDUM abrasive is over 99% pure fused alumina—no slag—no pores. You not only get *more* sharp cutting points in a 32 ALUNDUM wheel but points that don't dull easily because they're all *usable* abrasive.

Ask your Norton abrasive engineer to give you a Vectograph demonstration of the new 32 ALUNDUM abrasive.

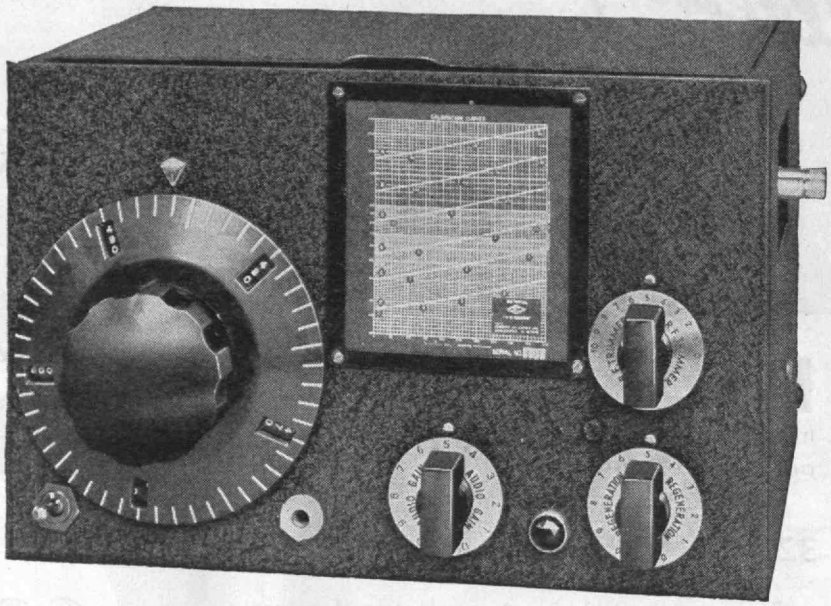
NORTON COMPANY, WORCESTER 6, MASS.

Distributors in All Principal Cities

W-1078

NORTON ABRASIVES

TRADE MARK REG. U.S. PAT. OFF.



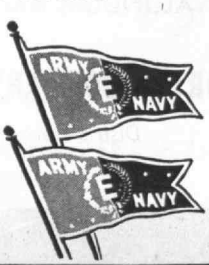
THE 1-10A

The ONE-TEN-A is a complete redesign of the ONE-TEN, retaining all the proven design features of the older model but with improved performance and smoothness of control.

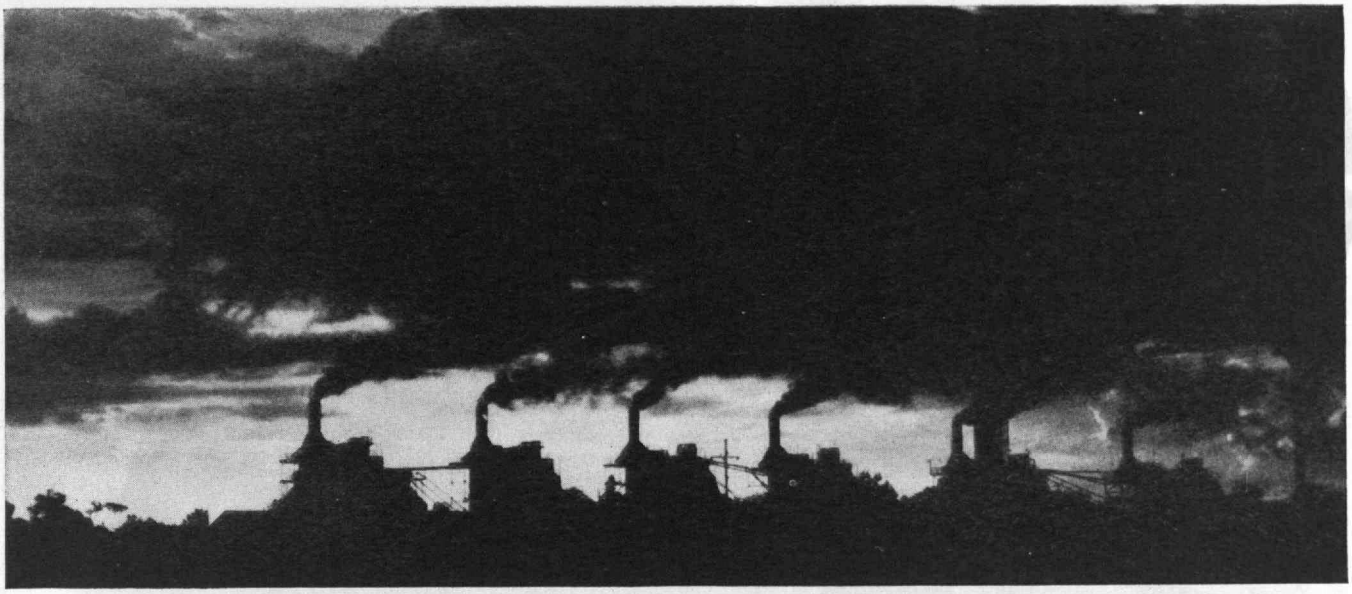
For many years the ONE-TEN has been the "standard" receiver for work in the range from one to ten meters. Although many advances in high frequency technique have been made since this little receiver was first introduced, it has easily held its place in the affections of experienced amateurs by its consistent dependability under actual operating conditions and its high usable sensitivity.

The new ONE-TEN-A inherits the fine qualities of its predecessor brought up to date by a complete restudy of circuit, mechanical arrangement and constructional details.

The ONE-TEN-A is a fine receiver.



NATIONAL COMPANY, INC., MALDEN, MASS.



These furnaces are a long way from a tire maker's plant, yet they are an important part of the rubber industry. They're at Ville Platte, Louisiana, and they are making carbon black to add toughness and mileage to the nation's truck and automobile tires.

But Ville Platte's carbon black represents only a part of Cabot production. From the pine timber country of Florida, to the alfalfa fields of the Rio Grande valley and the natural gas fields of Texas, Oklahoma and West Virginia, Cabot Companies are at work providing essential raw materials for American industry.

Carbon Black
Natural Gas
Natural Gasoline
Pumping Equipment
Pine Tar
Charcoal
Carotene
Chlorophyl

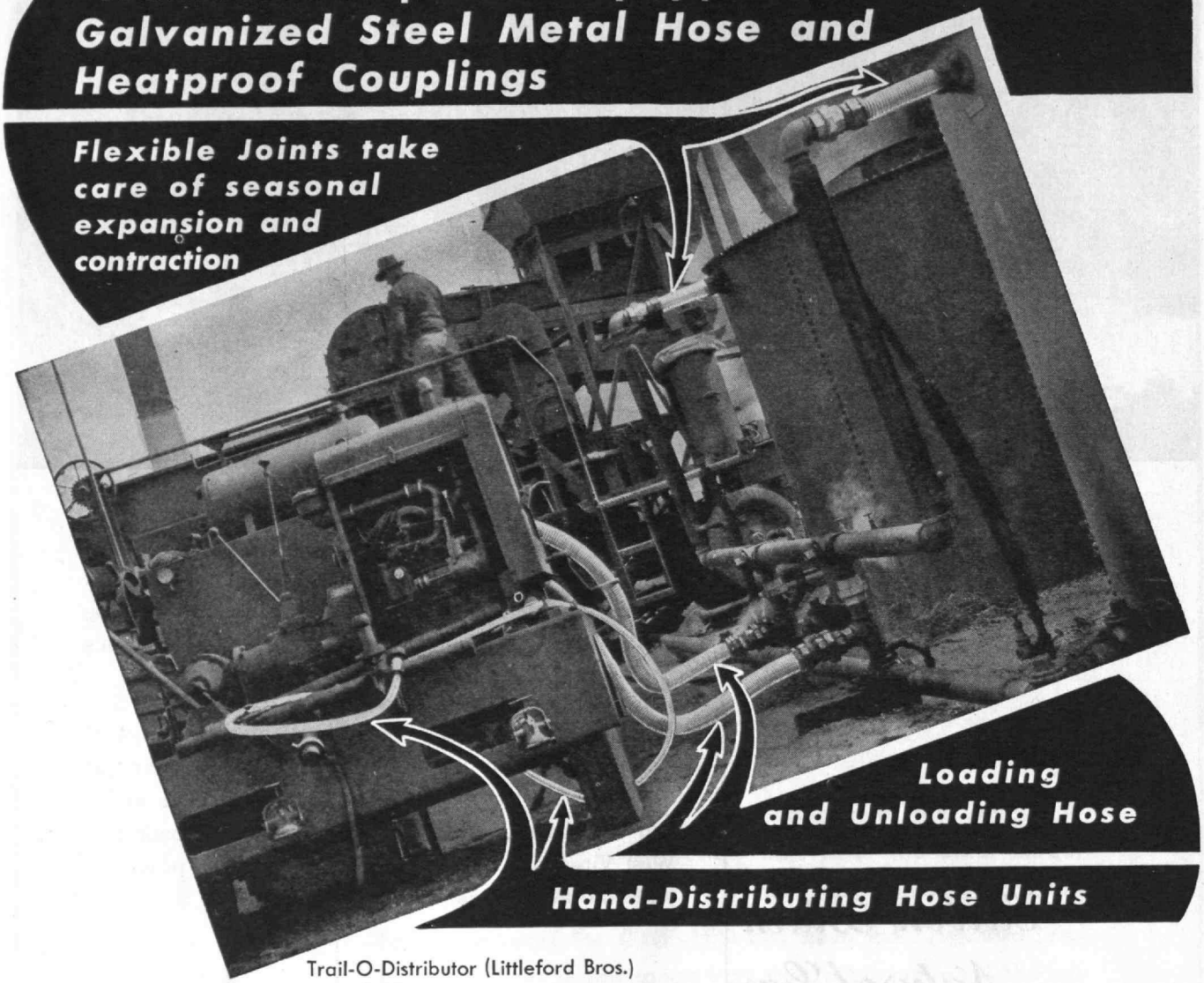
CABOT CARBON CO.
TEXAS ELF CARBON CO.
GENERAL ATLAS CARBON CO.
CABOT SHOPS, INC.
VALLEY VITAMINS, INC.

CABOT

GODFREY L. CABOT, INC.

77 FRANKLIN STREET · BOSTON 10, MASS.

Transfer Pump Unit equipped with PENFLEX Galvanized Steel Metal Hose and Heatproof Couplings



Trail-O-Distributor (Littleford Bros.)

This mobile transfer pump unit for use with storage tanks is equipped with two lengths of PENFLEX Unloading Hose which give large capacity and PENFLEX Hand-Distributing Lines which, if needed, have added value for redistribution.

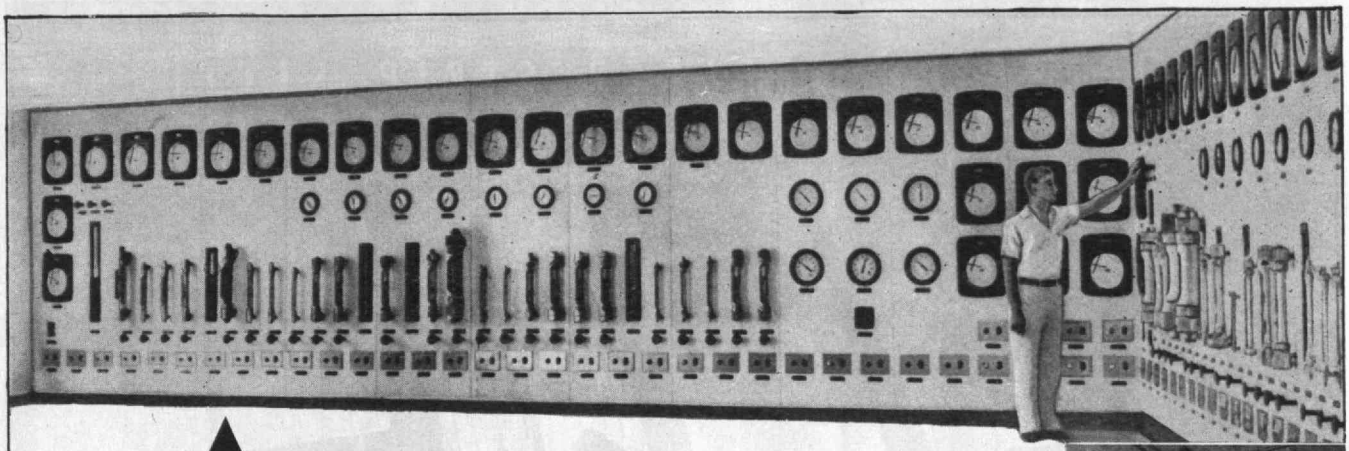
A unit of this type equipped with the PENFLEX Expansion Joints and Heatproof Couplings, on the storage tanks, suggests the wide variety of industrial uses to which PENFLEX Products can be put.

The four-wall interlocked PENFLEX construction is extremely flexible, reduces parts breakage, resists thermal and mechanical strains and absorbs vibration. Heatproof Couplings are furnished.

Our engineers have had a vast amount of experience in almost every conceivable application of flexible tubing and hose. They will be glad to discuss your problems with you. PENFLEX Products are listed in trade catalogs and directories for your convenience — *for detailed information, write our Engineering Department.*

PENFLEX SALES COMPANY
DIVISION OF
PENNSYLVANIA FLEXIBLE METALLIC TUBING CO.
Established 1902

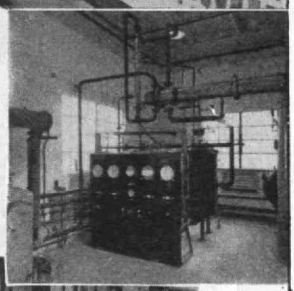
7211 POWERS LANE **PHILADELPHIA 42, PA.**

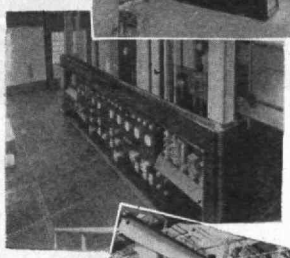


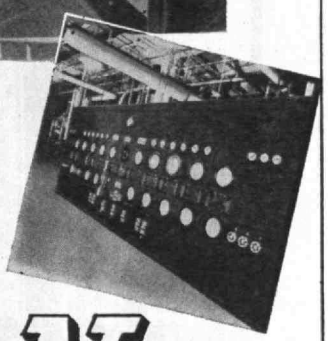
AUTOMATIC and CENTRALIZED CONTROL

Vulcan-designed distillation units and plants incorporate the latest developments in instrumentation. Through such automatic and centralized control, operating costs are kept at a minimum, uniformity of product quality is insured and overall high yields are guaranteed. Entire plant operations are controlled from a centralized control station, thereby eliminating costly variables which are bound to arise from obsolete manual operations.

The Vulcan engineering staff, through long experience in the development and application of the best types of automatic control, is available to furnish this valuable experience to the chemical process industries for plant modernization and improved operational methods.



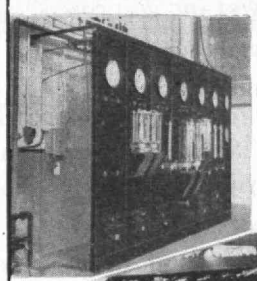


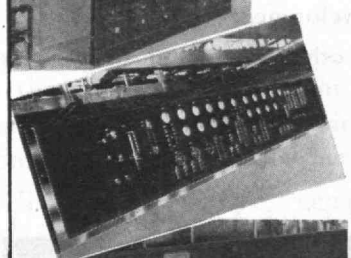


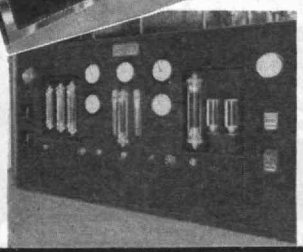
VULCAN

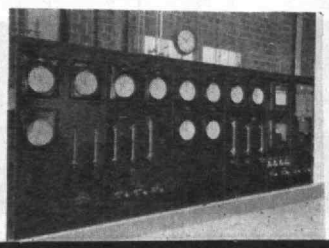
DISTILLATION
EVAPORATION
EXTRACTION

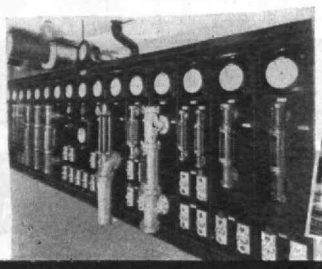
PROCESSES *and* EQUIPMENT

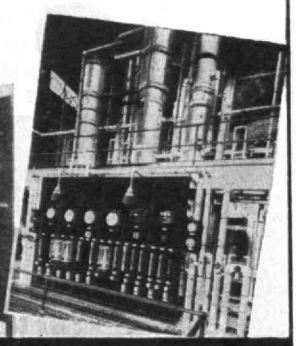






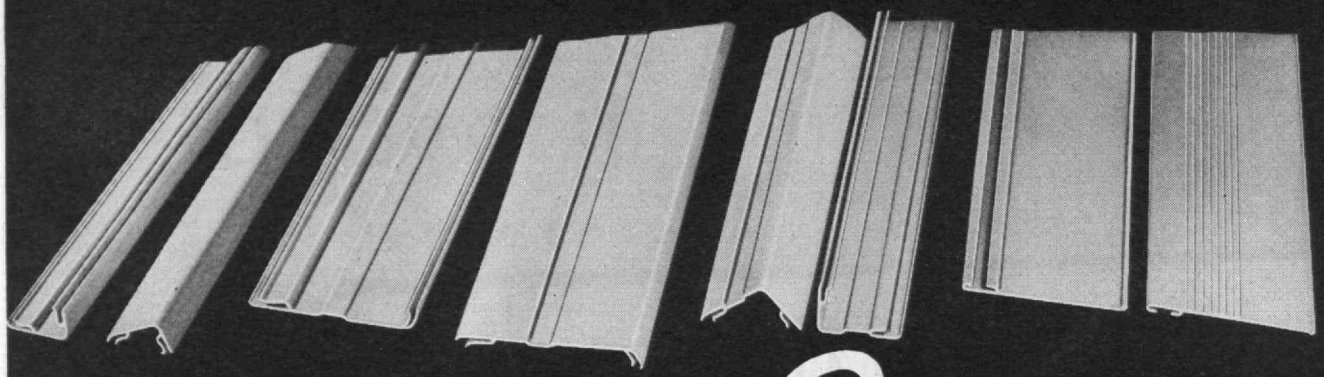




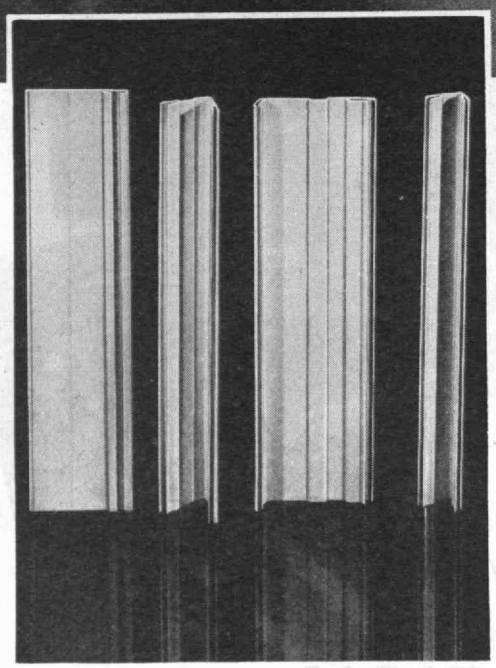


THE VULCAN COPPER & SUPPLY CO., CINCINNATI, OHIO

REFRIGERATOR BREAKER STRIP SECTIONS



EXTRUDED BY.. Sandee



THE ACCEPTED MATERIAL FOR BREAKER STRIPS

Plastics have long been the accepted material *for breaker strips. Modern trends, however, demand better functioning and better looking sections.*

The refrigerator breaker strip sections shown above illustrate another milestone in Sandee's development of sound industrial applications for plastics.

Sandee, in close cooperation with several leading refrigerator manufacturers, has developed a number of *better* custom extruded snap-on breaker strips. Among other superior advantages they 1. greatly decrease assembly time, 2. eliminate unsightly screws, and 3. provide a pleasing contour to blend into general cabinet design. Available in white or appealing, contrasting, pastel tones.

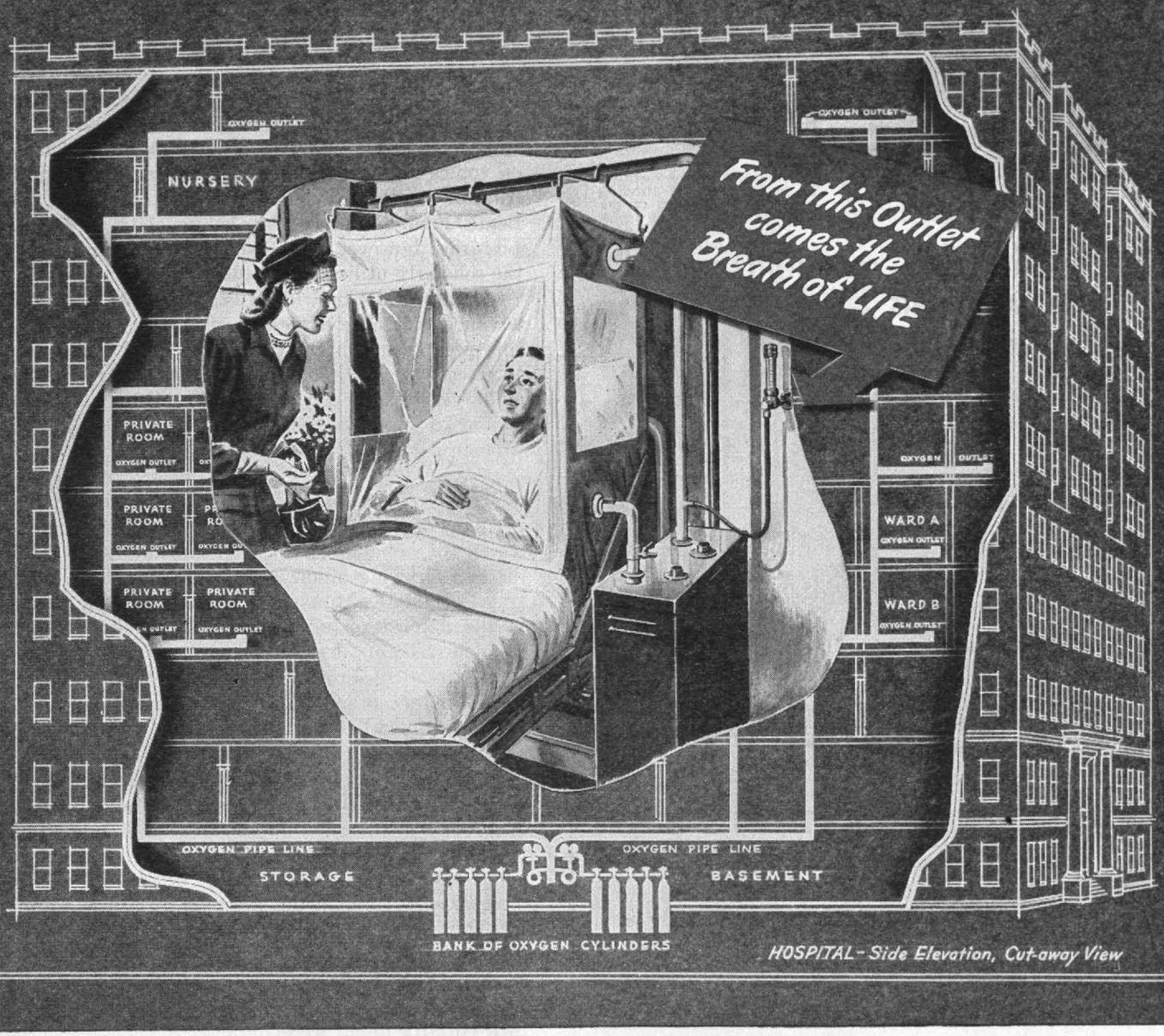
Again, our technical personnel can offer you the benefits of successful experience in the development of individual refrigerator parts as well as for other sound industrial applications.

SALES REPRESENTATIVES IN 19 PRINCIPAL CITIES

Sandee Manufacturing Company

3945 NORTH WESTERN AVENUE · CHICAGO 18, ILLINOIS

EXTRUDED PLASTICS AND SPECIAL TOOLS



HOSPITAL - Side Elevation, Cut-away View

OXYGEN TO BREATHE is the most important thing in the world to one who is ill and unable to get enough for life from the air alone.

The use of oxygen in medical practice has grown rapidly in recent years. Physicians have found it effective in the treatment of certain types of heart disease, shock due to wounds or injuries, following major operations, and for numerous other illnesses.

The need for extra oxygen is so frequent in hospitals that many of them, instead of depending on cylinders of oxygen brought to the bedside, now have convenient oxygen outlets in many rooms and wards. Oxygen is brought directly to the bedside through an unseen "pipeline" from a centrally located "bank" of oxygen cylinders.

Oxygen is a principal product of Units of UNION CARBIDE. It is supplied to hospitals—and in much greater amounts to industry for numerous mass-production operations—largely through The Linde Air Products Company.

Linde Oxygen is now so readily available that no one need ever be without oxygen for any purpose. Oxygen is but one of the many basic and essential products from UCC—materials which, all together, require continuing research and engineering work with over a third of the earth's known elements.

FREE: *Physicians, nurses, teachers, and others who would like more information on the availability of oxygen, and on the various types of oxygen therapy equipment, are invited to write for a copy of the* "OXYGEN THERAPY HANDBOOK." *Ask for Booklet P-11.*

UNION CARBIDE
AND CARBON CORPORATION

UCC

30 East 42nd Street — New York 17, N. Y

Products of Divisions and Units include—

ALLOYS AND METALS • CHEMICALS • PLASTICS
ELECTRODES, CARBONS, AND BATTERIES
INDUSTRIAL GASES AND CARBIDE

THE TABULAR VIEW

Philosophy of Librarianship is refreshingly discussed (page 25) by JOHN E. BURCHARD, '23, co-author of *The Evolving House: A History of the Home*, frequent writer on topics in science and architecture, stimulating contributor to The Review, and Director, Albert Farwell Bemis Foundation. It is in his capacity as Director of Libraries, however, that Professor Burchard deals with the scholarly utilization — rather than the mere storage — of the world's knowledge as a means to man's cultural advancement. The earnest gravity with which the Institute regards its library program is further indicated by the recent appointment of Dr. Vernon D. Tate (page 43) as librarian designee for the $2,500,000 Charles Hayden Memorial Library soon to arise on Cambridge's famed Memorial Drive.

Mechanistic Maneuvers forced upon man by the products of the technological age, provide the basis upon which the behavior of men and machines may be predicted. Drawing upon wartime experiences, PROFESSOR PHILIP M. MORSE stimulates thinking (page 29) in the application of operations analysis to peacetime problems. To an already brilliant career, well known to Review readers, Professor Morse has begun a new chapter in his acceptance of the directorship of the Brookhaven National Laboratory at Camp Upton, Long Island.

Minority Report (page 32) from TENNEY L. DAVIS, '13, reminds us — with ample historical documentation — that for all of the contributions of science, human nature is still human nature and not too well understood. After a lapse of several years, during which he has become director of research of the National Fireworks Company, Dr. Davis rejoins The Technology Review as one of its Editorial Associates and as one whose past writings have attracted wide comment.

Sun Gazing might well characterize the daily activities of DR. WALTER ORR ROBERTS who has been, for the past six years, superintendent of Fremont Pass Station, Harvard College Observatory, Climax, Colorado. His article (page 33) traces the development of the Lyot coronagraph whose use during the war was instrumental in predicting sunspot activity which interrupted transatlantic radio communication. A native of Massachusetts and graduate of Amherst and Harvard, Dr. Roberts completed one year of research at the Eastman Kodak Company in Rochester, but now prefers the sunny heights of Climax.

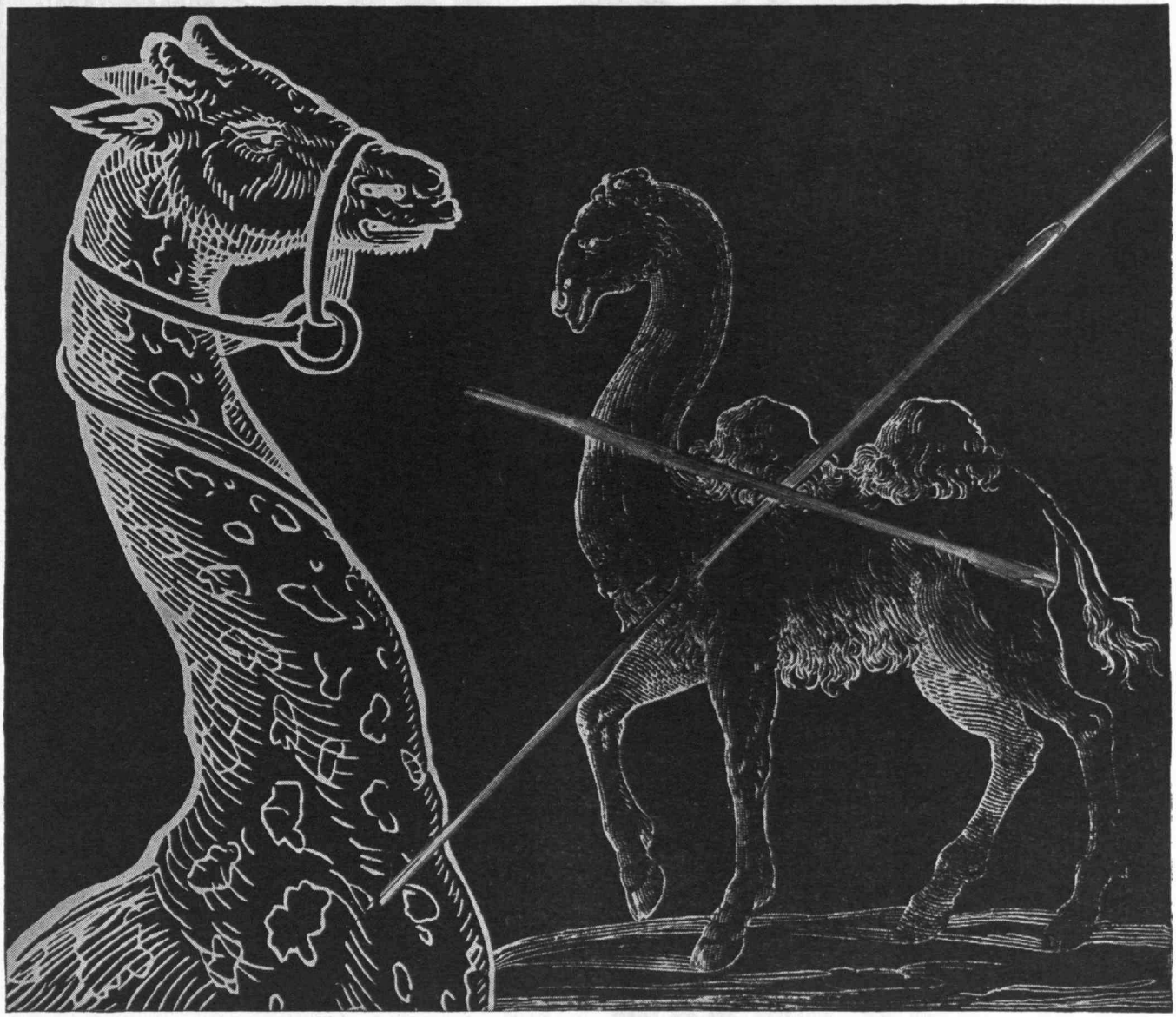
Inventive Productivity is not the exclusive sphere of youngsters, according to studies made by THOMAS SPOONER who followed his collegiate studies at Bates College with a four-year course at the Institute from which he was graduated in 1909. Indeed, Mr. Spooner points out (page 37) that training and maturity are as necessary for inventiveness as for any other activity. Since his graduation from the Institute, Mr. Spooner has been with the Westinghouse Electric Corporation in various responsible research and executive positions. He is currently manager of the Engineering Laboratories and Standards Department. (*Concluded on page 70*)

ONE MORE STRAW—ONE LESS CAMEL!

Many centuries ago the weight of one last straw broke a camel's back. Thus somebody's artless optimism about the strength of a vital part wrecked a perfectly good materials handling system.

Today it is plain, cold fact that ignoring the depressing effect of low temperatures on the impact strength of vital steel parts can be a short cut to a long line of avoidable, costly troubles.

The solution for the problem in the fable was less load or more camel. For the modern problem the answer is a molybdenum steel that combines the deep hardening and freedom from temper brittleness necessary to provide good low temperature impact strength.



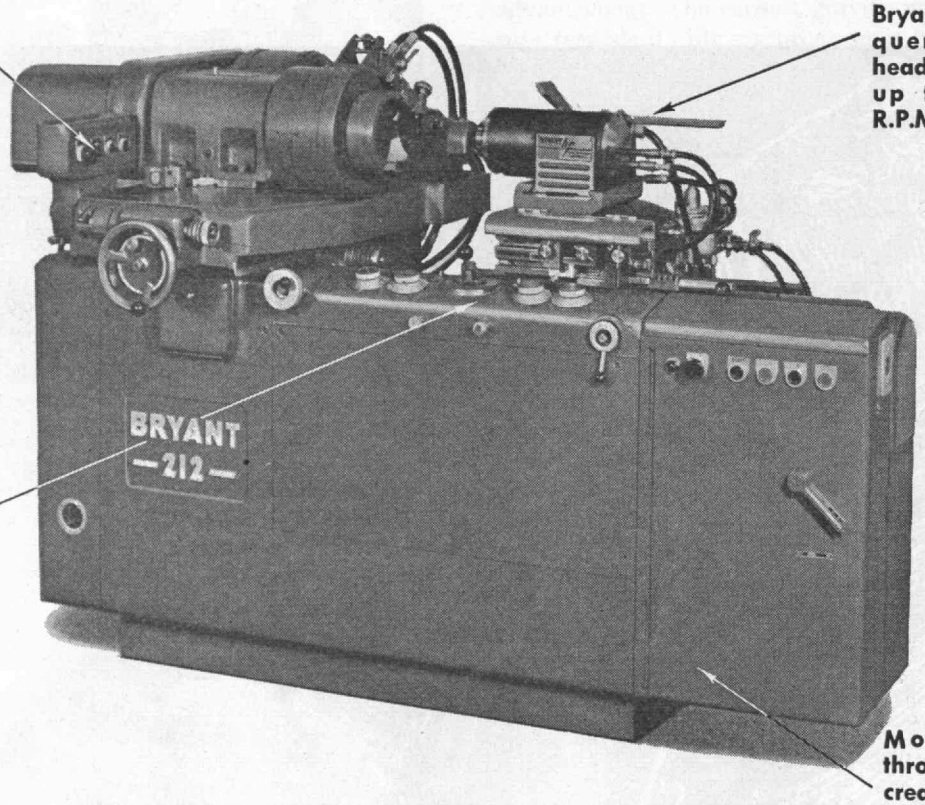
MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"
CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

Climax Molybdenum Company
500 Fifth Avenue · New York City

MOLY

Announcing a New Automatic High Production Internal Grinder

No. 212



Another BRYANT Postwar Development

The new No. 212 Bryant Grinder is designed to fill the pressing need for greater production per man hour. It is a fully *automatic* internal grinder that requires a minimum of operator attention—in fact on many jobs one man can run two machines. Production is higher, more precise and more profitable with this new grinder.

The new No. 212 Bryant roughs and finishes bores from 5/16" to 6" (approx.) in diameter in lengths up to 3 inches. On the smaller bores, it is especially suited to the use of *Bryant High Frequency wheel spindles which operate at speeds up to 100,000 r.p.m.*

The No. 212 design incorporates the superiority of Bryant three point wheel slide suspension and insures maximum rigidity under all conditions. Movements of the machine are hydraulically operated, while the cycle is controlled electrically to facilitate change-over. Sizing is accomplished accurately and automatically by any one of three methods: a plug gage mounted in the work spindle, a diamond tipped bore contact, or controlled by the wheel truing diamond. It *roughs* and *trues* and *finishes* and stops *automatically*—producing parts with fine work finish to tolerances that insure bores that are straight and round, making the products which you manufacture more desirable because they run smoother and live longer.

If grinding figures in your production plan, your move for best results is to—

SEND For The Man From Bryant.

BRYANT

BRYANT CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.

more than 300...

100,000 barrels of ethylene per day is the capacity of this plant, designed and built by Lummus.

Lummus has designed and built over 300 plants for manufacturing ethylene, butadiene, phenol, alcohols, solvents, and other chemicals from petroleum and other source materials.

Petroleum is a low-cost source of these chemicals, and the market for them is expansive. It is estimated that chemical, pharmaceutical, and cosmetics manufacturers will invest a billion dollars in expanded facilities during the next five years.

With complete research and construction facilities and with broad experience in petroleum refining as well as in chemical production, Lummus is prepared to design and build for you a plant which will produce petroleum chemicals most economically.

Lummus engineers will gladly discuss with you the practical considerations of building or expanding your petroleum-chemical facilities.

THE LUMMUS COMPANY
420 Lexington Avenue, New York 17, N. Y.

LUMMUS

CHICAGO—600 South Michigan Avenue, Chicago 5, Ill.
HOUSTON—Mellie Esperson Bldg., Houston 2, Texas
LONDON—78 Mount Street, London, W. 1, England

Write for a copy of "Development of the Postwar Petroleum Refining Picture."

MAIL RETURNS

Brooklyn's "High Road"

FROM BLAIR BIRDSALL:

The writer's attention has been called to the two articles entitled, "High Road to Brooklyn," by E. H. Cameron, which appeared in the May and June, 1946, issues of The Technology Review.

These articles are of such outstanding quality that I did not want to let them pass without comment. The author and the editorial staff of the publication are to be congratulated for a splendid piece of technical reporting which, unlike so much of this type of writing, must have a very strong appeal to the non-technical reader. Furthermore, to the best of my knowledge, the facts are all correct and in sufficient detail to give a clear and thorough bird's-eye view of the work, its background and its unique position in engineering history.

As a footnote to the articles, for those who are not aware of the incident, the following story may be of interest. The last War Loan Drive in December, 1945, coincided with the completion of the removal of the unsightly Brooklyn Bridge elevated station adjacent to City Hall Park in Manhattan. As a result of this work, it is now possible to see the Brooklyn Bridge from City Hall Park. These events were made the occasion for a little ceremony on the Bridge plaza entitled "The Re-Unveiling of the Brooklyn Bridge." Following speeches by several of the city officials, including the Borough Presidents of Brooklyn and Manhattan, Mayor LaGuardia arose to address the group. After a few introductory remarks, he announced that, although he realized he had had several notorious predecessors, he was sure that none of them had had the temerity to foist upon the public such a transaction as he now proposed to launch. This, he stated in effect, was nothing less than the sale of the Brooklyn Bridge to the highest bidder. With this he turned to an assistant, asking for the Brooklyn Bridge, and placed on the rostrum a three-foot scale model of the structure. The bids, of course, were to be in War Bonds. The first bid was in the neighborhood of $6,000,000. The second bid was for $17,500,000 — and the Mayor lost no time in knocking the bridge down for this figure. The successful bidder was a New York retail merchants' association.

Trenton, New Jersey

Summer Solace

FROM DUGALD C. JACKSON:

I think you did a fine job in the July issue of The Technology Review and indeed you are doing a fine job for The Review throughout. I heartily congratulate all those associated with this periodical.

Cambridge, Mass.

NEW BRITAINS TAKE THE "X FACTOR" OUT OF PRODUCTION PLANNING

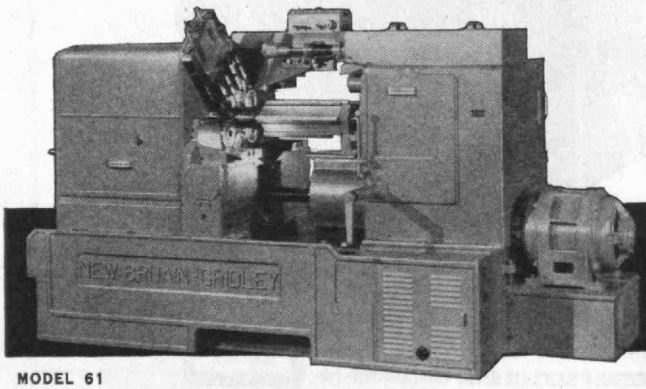
When you are planning a production schedule, it's important to be able to plan on continuous high production from your automatic machines.

New Britain owners know you can safely set a stiff program for their multiple spindle automatic screw and chucking machines . . . and safely count on meeting the demand with accuracy well within specified tolerances.

It will pay you to investigate the use of New Britains for your machining requirements. Our nearest field representative will gladly discuss them with you.

For more, better parts per hour at lower cost, this year and years from now, it pays to pick New Britain.

New Britain builds four and six spindle automatic screw machines up to 2¼" capacity... also a complete line of multiple spindle automatic chucking machines — four, six and eight spindles up to 12" capacity.



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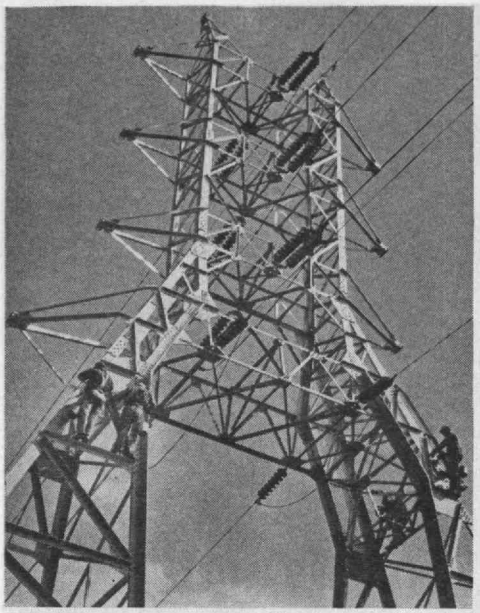

Photo by Harold M. Lambert
Transmission of Power

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Photo by S. M. Hall

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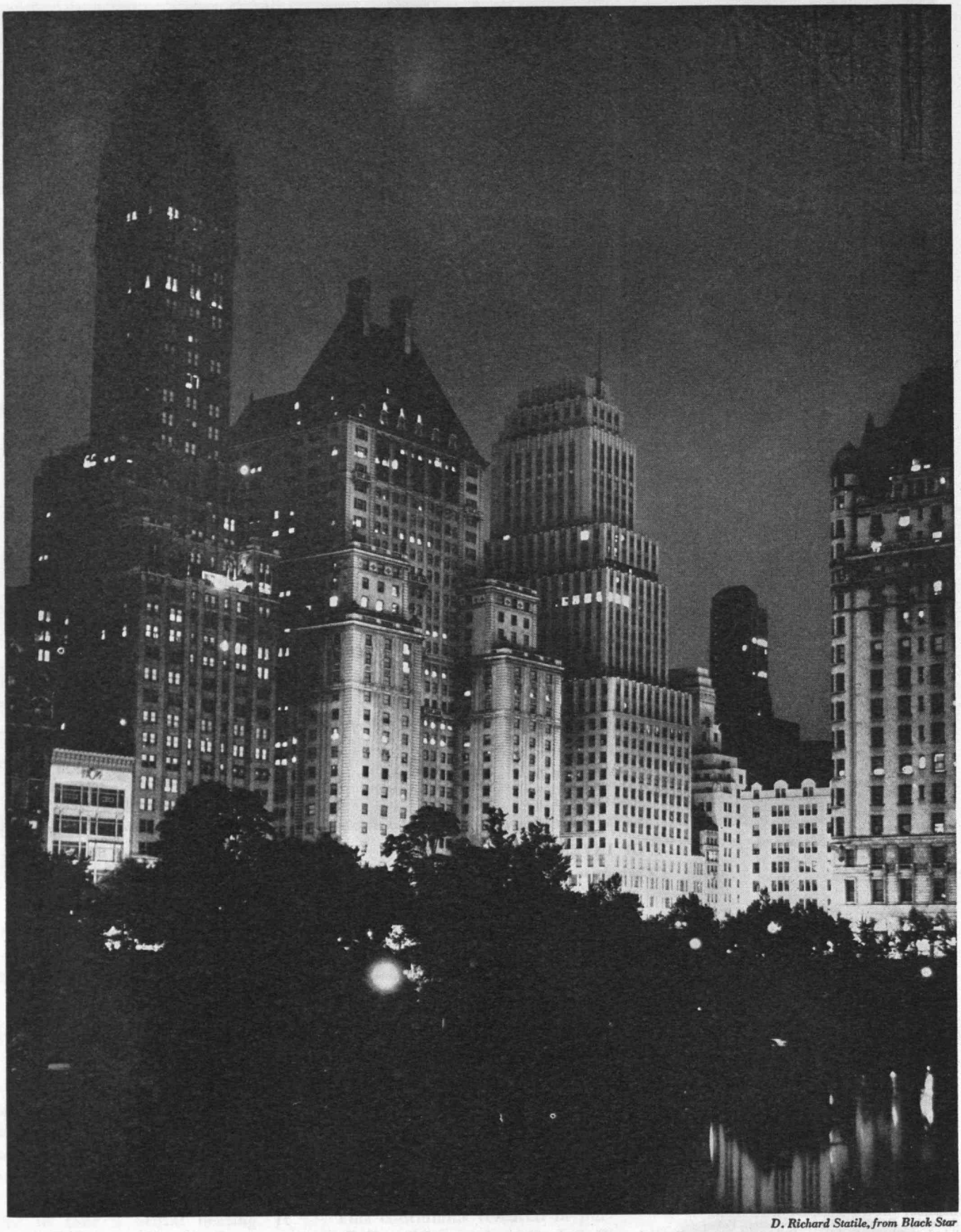


D. Richard Statile, from Black Star

Turn the Nighttime into Daytime

The corner of Fifth Avenue and 59th Street, New York, offers an attractive view by day or by night

THE
TECHNOLOGY REVIEW

Vol. 49, No. 1 November, 1946

The Trend of Affairs

Dollars from Guinea Pigs

A REMARKABLE feature of our current export trade is the expansion in the sale of penicillin, and — second only to the world-wide demand for that elixir of life — the growth and vigor of our overall export of drugs. Penicillin is one of the very few American products whose sales to foreign countries are exceeding by a considerable margin (about two to one in this case) the sales within the United States itself.

In 1938 this country exported about $17,000,000 worth of drugs and medicinals. In 1945 the sale to foreign markets of penicillin and sulfa derivatives, two drugs which did not even appear in the 1938 listings, exceeded $18,000,000. Even in regions where dollar exchange is scarce, demand for penicillin seems to be more intense than for any other item except food. The foreign demand for this comparatively new product has continued to grow so rapidly, however, that the last available export figures for 1946 show the monthly sales of penicillin to be about *ten* times the total monthly sales of all drugs in 1938. It will be remembered that the sale of penicillin for civilian use did not begin until May, 1944, and then it became available only on a limited scale, although penicillin was in fairly large-scale production in 1943 for military and research applications. By 1945 American production was more than 300 times the 1943 rate. While the United States remains by far the largest producer and exporter of this drug, Great Britain and Canada now have small surpluses for export and various other nations are producing part or all of their requirements.

That our drug exports in 1945 should be substantially larger than in 1938, the last peacetime year, is not altogether surprising. The war eliminated many competitors in this market, forced our drug industry to expand its capacity greatly and introduced American trade names and products into many new areas. More striking than the seven-fold increase in the value of these exports, however, has been the change in their character, which, in a sketchy way, may almost be regarded as a summary, or at least a reflection, of current progress in medicine. In most cases the items which now dominate our drug exports were not even mentioned in the 1938 list. Included among these new products in 1945 were $25,000,000 of vitamins and vitamin concentrates, $12,000,000 of penicillin, $7,800,000 of glandular products, $7,000,000 of sulfa drugs, and $5,000,000 of antimalarials, chiefly atabrine.

If these figures are impressive, it is not because of any direct effect on world trade statistics. In 1945 the United States spent $345,835,000 on one import item alone — coffee!

Sorghums—New Industrial Grain

ALTHOUGH known since the days of ancient Egypt and Assyria and mentioned in the Bible, grain sorghums have always remained minor members of the cereal family. Also called milo, kaffir, and durra, grain sorghums must be distinguished from common sorghum or sorgo, a plant raised for its sugary juice. Grain sorghums bear kernels composed mainly of carbohydrates and proteins, similar to the kernels of wheat, corn, and other common cereals.

But lately grain sorghums have developed important industrial utility. Previously, sorghums had not been used commercially because the more familiar grains long customarily used for industrial processes (corn for wet milling to make starch, barley for malt, rye for whisky, and so on) were usually plentiful. Furthermore, the original grain sorghums grew at such a height, and with such irregularity of stem and kernel, that they could be harvested only by hand — a crippling obstacle to large-scale growing. This latter shortcoming was eliminated, however, by development through genetics of a "combine type" of grain sorghum which may be mechanically harvested. Therefore, one man using agricultural machinery may now tend 160 acres of grain sorghums from plowing

time through harvest, an economy of man hours rare among agricultural crops.

Next, grain sorghums demonstrated striking ability to grow in semi-arid regions. Hence more than 70,000,000 dry acres of United States farmland, unable to grow corn or wheat profitably, can produce fine yields of grain sorghums. Recognition of this ability to thrive with little moisture led to trebling production of grain sorghums in this country during the decade beginning in 1934, with an annual total of 180,000,000 bushels reached by 1944. Such plentitude of grain sorghums proved to be most opportune during the war, because then production of the major grains flagged, food use demand for cereals increased, and in some instances, price structures made it more profitable for growers to feed grain to farm stock rather than to sell the grain off the farm.

During the resultant shortage industrial grain users, maltsters, brewers, distillers, syrup manufacturers, wet millers, and others used great quantities of sorghums to meet needs normally supplied by the conventional cereals. Furthermore, a waxy type of grain sorghum was perfected that supplied a replacement for tapioca, needed because imports of cassava root were stopped, the normal raw material for tapioca manufacture. Sorghums won favor in many of these emergency applications, and are still used.

Grain sorghums also have potential value as human food. They have, in fact, been consumed by African natives for centuries. But custom, rather than availability, and nutritive value determine what foods are eaten in any particular country, and grain sorghums are a bizarre food to the American consumer. Therefore, the future of grain sorghums lies not in food uses but rather in expanded industrial applications, where unfamiliarity never hampers adoption of a new raw material.

This pair of photographs, selected in part because of their almost mirror-image composition, are symptomatic of the Trend of Affairs in the Institute's current activities. Depicted are two of the chemistry laboratories which, after functioning in a program of research for the Chemical Warfare Service, have been renovated and are now in use in the greatly enlarged educational program at

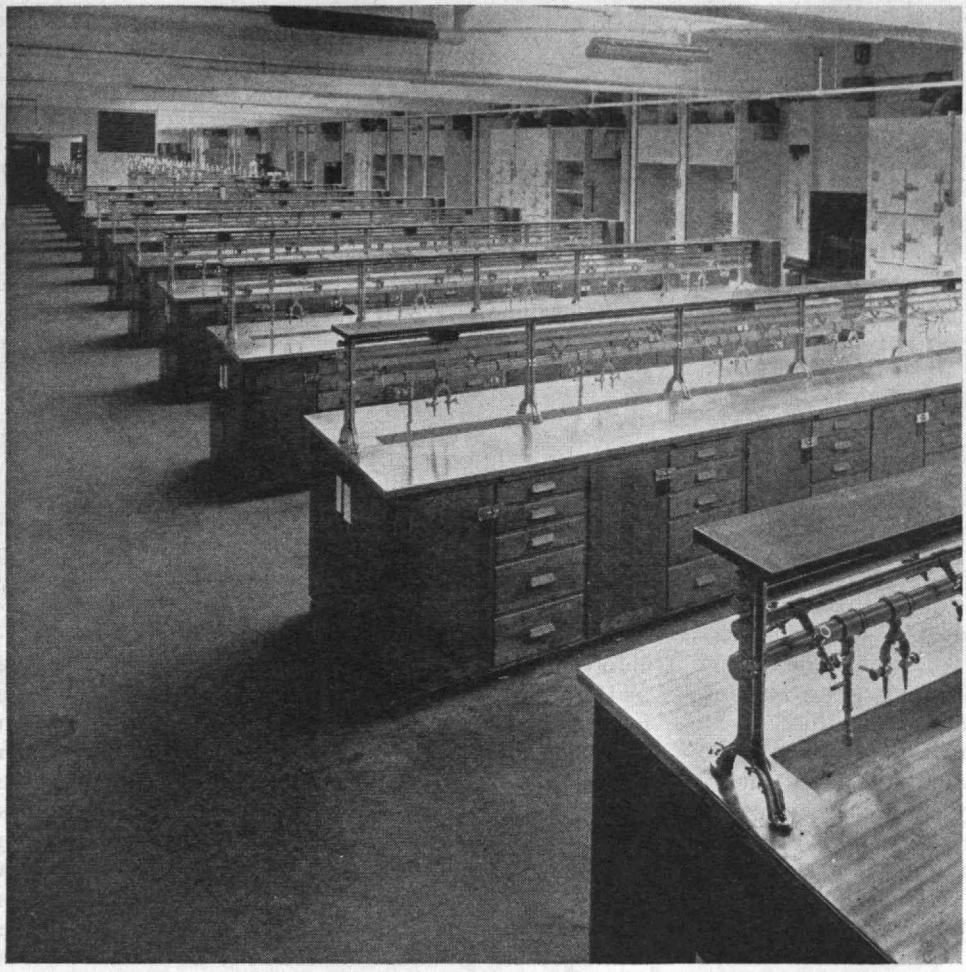
Bataan and Its Aftermath

By Samuel A. Goldblith

TO the native and American defenders of the Philippines the events preceding and following the surrender of Bataan mark a tragic period of Twentieth-Century suffering. Certainly the inhumanities inflicted during the Death March must be thoroughly condemned. At the same time, some gratification, however slight, may be gained from the realization that a study of Bataan and its aftermath brings to light the need for a better understanding of food nutrition on the part of combat officers and men. Indeed, had such knowledge been more widely dispersed, it is probable that a considerable number of Bataan casualties might have been avoided.

The Japanese blockade of the Philippines in 1942 made it necessary for the defending Filipino-American forces to subsist entirely on what foodstuffs had been evacuated from Manila to Bataan Peninsula and — with the exception of a few submarine loads of food, ammunition, and medical supplies — what commissaries had been stored in Corregidor. As a result, the ration issued the troops was very small and, by January 6, 1942, all of the Army units were on quarter rations. But meals were served daily and usually these consisted of 10 ounces of rice per man, one can of milk per 10 men, one can of pink salmon per 10 men. Caribou or mule meat was issued in small quantities about once a week. Such was the dearth of foodstuffs that the 26th Cavalry, Philippine Scouts, were dismounted and their horses and mules slaughtered, and the meat issued to the troops. Another reason for killing the horses of the 26th Cavalry was the lack of horse feed. Other than small amounts for the hospital, no fresh or canned vegetables were available for issue at all.

By March, when rations were further reduced, malnutrition had affected everyone. In addition, actual starvation became serious in many cases. This was the condition of the Filipino-American troops just before the surrender of Bataan on April 9, 1942.



Technology. With a total enrollment in excess of 5,000 students (of which more than 3,000 are war veterans) such modernized and expanded facilities are by no means excessive — if indeed they are adequate — to cope with the Institute's share of a nation-wide problem. The unprecedented expansion in higher education has been particularly severe in the schools of engineering.

Having brought up fresh troops, many tanks, guns, and planes, the Japanese began a large-scale offensive on April 1, 1942. Because of starvation, coupled with three months of continuous fighting in the trenches and foxholes without relief, the Filipino-American troops began to retreat and were forced to surrender on April 9, 1942. At the onset of the last Japanese drive the defending troops were physically incapacitated to carry out the task they were forced to meet. Of the men in the 31st Infantry (United States) 80 per cent were on the sick list suffering from malnutrition, malaria, and dysentery. As a result of insufficient diet, their resistance was so weak that malarial attacks kept recurring and the men were getting weaker daily. At the onset of the last Japanese drive, this unit was in a rear area but was immediately ordered to the front. The only way in which the men could reach the combat zone was to march 10 minutes and rest 10 minutes, although normally, troops march 50 minutes and rest 10 minutes! Many of the artillery units which consisted of Filipino troops with American officers attached as instructors had hardly enough men available for one gun crew. These are but a few of many examples that could be cited to illustrate the complete exhaustion of our fighting forces on Bataan. It is the firm belief of many of the senior and medical officers that, had the troops of Bataan been on sufficient rations, the story of Bataan would have been much different.

The troops on Corregidor were on a diet somewhat better than those in Bataan; a little more beef and some vegetables were issued.

Immediately following the surrender of Bataan, the Filipino-American troops were ordered by the Japanese to march to San Fernando, Pampanga Province, a distance of 60 to 100 miles, depending in which part of Bataan they were captured. Even though in pitiful physical condition our men were forced to march 25 to 28 miles per day. This march, now known as the Death March, was conducted at the point of a bayonet; those who could not keep up were killed. Most of the troops were not fed at all for five to six days on this march. No distinction was made between officers and men. Finally when food was issued, each man received only a few spoonfuls of steamed rice. One American Army doctor who made the march, aptly remarked: "The men made the Bataan-San Fernando march on the marrow of their bones!"

As a direct result of the tremendous exertion of this forced march under a blistering tropical sun, the lack of food, and the completely inadequate supply of water (and that of very poor quality), many Americans and Filipinos soon died at the first Prisoner of War concentration camp at Capas, Tarlac Province, whence they were taken in closed box cars from San Fernando. Many more men were permanently disabled as a result of this march in which cardiac and gastro-intestinal ailments were the most prominent diseases. Many more were so weakened and debilitated that they easily succumbed to malaria, dengue fever, dysentery, and other tropical diseases. Deprivation of good drinking water on the march — one of the worst hazards of the tropics — necessitated the consumption of stagnant, impure river water along the march. This in itself brought about a great deal of dysentery and other enteric diseases. By October 4, 1942, more than 1,500 Americans and 27,000 Filipinos had died at Camp O'Donnel, Capas Tarlac, the first concentration camp. In July, 1942, most of the American prisoners at Camp O'Donnel were transferred to Cabanatuan, where the forces on Corregidor had previously been taken in June, and by October 4 in excess of 2,100 deaths had occurred there. Thus, out of a total of approximately 14,000 to 16,000 American prisoners of war more than 3,600 deaths occurred; whereas out of 60,000 to 70,000 Filipinos there were 27,000 mortalities, most of which can be traced almost directly to malnutrition. Early at Camp O'Donnel many cases of polyneuritis appeared.

What are the reasons for the higher Filipino death rate

in prison camp — 27,000 deaths out of 60,000 in a period of six months as compared to 3,600 deaths out of 14,000 American prisoners? One reason may be that the inherent stamina of the Filipino, a rice-eating people, was less than that of the American, a wheat-, meat-, and potato-eating nation. Another may be the superior education of the American people in personal and community hygiene and sanitation as compared to that of the average Filipino peon who made up the bulk of the recruits of the Filipino Army of 1941–1942.

The causes of deaths at O'Donnel and Cabanatuan are: (1) malnutrition, before and after the surrender; (2) malaria and dysentery, especially amoebic, coupled with the lack of drugs for proper treatment; (3) the march out of Bataan; (4) improper sanitary facilities.

Throughout Bataan and its horrible aftermath, the necessity of proper sanitary measures — especially such measures as might be practiced by the individual soldier — was never fully realized. For example, knowledge that three drops of tincture of iodine to a canteen of water would serve as an antiseptic water purifier when calcium hypochlorite tablets were not available, saved the lives of many men on the Death March. Many more men would not have contracted amoebiasis had they been trained in such simple facts of protective sanitation as this.

An elementary knowledge of nutrition helped save the lives of quite a few men. In Cabanatuan, many officers and men did not contract scurvy simply because they permitted the mungo bean which they were issued to sprout and then ate both the beans and the sprouts. It is a common nutritional fact that whereas fresh mungo beans are practically devoid of vitamin C, they are relatively high in this anti-scorbutic vitamin when allowed to sprout.

Knowledge of how best to spend their money for foods so as to obtain the dietary factors they needed most was of great advantage to some of our soldiers. Peanuts, a very cheap foodstuff in the Philippines, are very high in protein and fat. Many of the men spent 80 centavos for a can of corned beef obtaining thereby about 80 grams of protein, whereas for this amount of money they could have obtained about 400 grams of protein from peanuts. These are but a few examples of how many men benefited in those times of stress from an elementary knowledge of the simple facts of sanitation and nutrition. We may, regrettably, record that many more died because they were ignorant of facts such as those given above.

Had all officers commissioned in our armed forces received training in nutrition and personal and community hygiene and sanitation, they undoubtedly would have been better able to take care of the health and welfare of the men under them and to purchase food and equipment more wisely. Bataan served as an excellent example whereby such knowledge meant the difference between survival or death through judicious use of what few materials there were at hand.

The White Sands Proving Ground

WHILE the United States did not establish the first proving ground for heavy liquid fuel rockets, it now has the largest field which, in time, may also be the best equipped. The Secretary of War approved the establishment of this proving ground for long-distance rockets and guided missiles on February 20, 1945. The site had been previously selected by a representative of the Office of the Chief of Ordnance and representatives of the Engineer Corps. It is an area of desert land extending for 125 miles due north into the state of New Mexico from the New Mexico-Texas state line north of El Paso, Texas.

The area is a typical southwestern desert with a sparse vegetation of sagebrush and tumbleweed but with a few special features. In the northern section there are some beds of black lava produced by a long-extinct volcano, while the east-central section shows immense shifting dunes of blinding white gypsum sands. In 1933 this area of the white gypsum sands had been made into the White Sands National Monument. Since the rocket testing area embodies the site of the (former) National Monument the whole proving ground has been officially named the White Sands Proving Ground.

The proving ground is of a generally rectangular shape, narrowing toward the southern base line. In the north it is 41 miles wide, in the south, 25 to 30 miles. The launching area and the permanent facilities, such as the control blockhouse with its 10-foot concrete walls and its pyramidal roof with a maximum thickness of 27 feet of reenforced concrete, the launching towers and launching platforms, the test stands for rocket motor tests, and the facilities for the personnel are located in the southern section of the proving ground, within sight of the Organ Mountains. A specially built highway connects the launching area with United States Route 70 which crosses the southern part of the proving ground diagonally. In the West, Route 70 leads to Las Cruces, New Mexico (a distance of about 30 miles). In the East, Route 70 leads to the Alamagordo Air Base, just outside the borderline of the proving ground. Connection to El Paso, Texas, is via Las Cruces. United States Route 80 leads from Las Cruces to El Paso, a distance of slightly more than 60 miles.

The proving ground itself is actually a valley — 4,000 feet above sea level. It lies between two mountain ranges, the San Andres Mountains in the West, and the Sacramento Mountains in the East. Both of these ranges ascend to 6,000 feet measured from the valley floor, or 10,000 feet above sea level.

The first work done on the proving ground was in connection with the testing of captured German V-2 rockets. At the end of July, 1945, transportation of about 300 carloads of V-2 parts to White Sands got underway. A total of 25 rockets were assembled from these parts. The first rocket actually to rise from the proving ground was not a captured V-2 but an American high-altitude rocket built by the Douglas Aircraft Company. It had an overall length of 16 feet and a diameter of one foot and was fired with the aid of a booster unit. It reached an altitude of 230,000 feet.

After the firing of this missile the first ground tests of captured V-2 motors was begun in March, 1946. The first ascent of a V-2 took place in April, 1946, followed by the ascent of May 10, 1946, to which the press had been invited. Since then there have been other launchings. One of the V-2's exploded at take-off near the ground; another one at an altitude of about 5,000 feet. Most rockets reached an altitude of about 80 miles. One record shot took place on July 30, 1946, when an altitude of 104 miles was reached; another occurred on October 10, when a rocket stayed aloft 11 minutes, attained a speed of 3,600 miles an hour, and reached an altitude of 102 miles.

All architectural drawings from Voorhees Walker Foley and Smith

Architect's drawing of the front of the Charles Hayden Memorial Library on Memorial Drive, and connecting Building 2 of the main group of Institute Buildings (left) with Walker Memorial

The Wreck of Matter and the Crush of Worlds

Cultural Scholarship, through More Effective Ways of Utilizing the World's Knowledge, Is the Philosophic Basis for the Charles Hayden Memorial Library

By John E. Burchard

". . . scarcely had I opened the fatal box than some blue cards escaped from it, and, slipping through my fingers, began to rain down. Almost immediately, acting in sympathy, the neighboring boxes opened, and there flowed streams of pink, green, and white cards, and by degrees, from all the boxes, differently colored cards were poured out, murmuring like a water-fall on a mountain-side in April. . . . Issuing from their inexhaustible reservoirs with a roar that continually grew in force, each second increased the vehemence of their torrential fall. . . . Overwhelmed, desperate, pitiable, his velvet smoking-cap and his gold-mounted spectacles having fallen from him, he vainly opposed his short arms to the flood which had now mounted to his arm-pits. Suddenly a terrible spurt of cards arose and enveloped him in a gigantic whirlpool. During the space of a second I could see in the gulf the shining skull and little fat hands of the scholar; then it closed up and the deluge kept pouring over what was silence and immobility."

Preface to Penguin Island
Anatole France (Evans tr.)

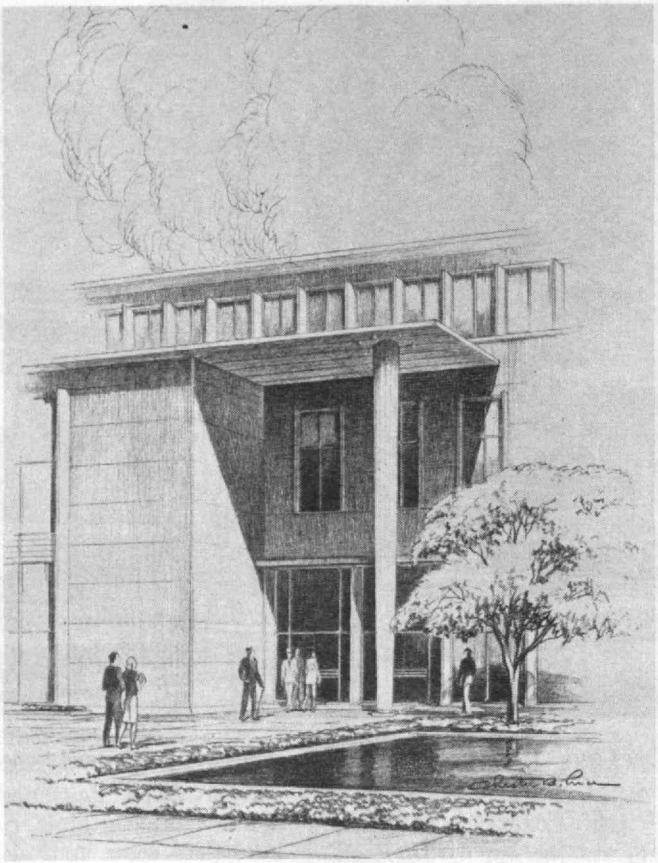
POOR Fulgence Tapir, the penguin scholar, drowned in his own cards, may have been, and most likely was, the victim not of volume but of sloppy mechanical arrangements. He had stored his cards too high and too precariously. He had a great many cards for his day, enough to drown him, in sooth. But now there are enough references to drown everyone. Indeed a change of our title from "worlds" to "words" will provide appropriate expression of the fear, enunciated with increasing frequency, that the human race may "suffocate from its own intellectual excreta."

At least three theses have been advanced as solutions to this dilemma. One comes from an experienced librarian, one has recently been restated by a young biologist, the third is the proposal of a nationally famous scientist, administrator, and engineer.

Dr. Fremont Rider, Librarian of Wesleyan University, has been a serious student of bibliothecal matters for years. He has collected statistics on the growth of university libraries. When he boldly extrapolates these data

into the future the results are frightening. If, as Rider says, scholarly libraries have, on the whole, doubled their holdings each 16 years of late, and if, as he believes, this rate will persist indefinitely, Harvard University will have 8,000,000 volumes in 1962; 16,000,000 in 1978; 32,000,000 in 1994. Holdings of other institutions will grow proportionately, some perhaps even faster. "Where are all these books to be put?" asks Rider.

Looking merely at the storage problem, he proposes the reduction of the contents of a volume to a single printed card by microphotographic processes which are currently possible (or almost so and which are certainly conceivable) coupled with appropriate magnifying equipment for the reader. By such a process a book of 250 pages might be stored on a three by five inch library card and filed, if you will, in the card catalogue itself. Evidently some 250 books could be kept where one now rests. With such a system in operation Harvard University, which now can store 4,000,000 volumes with not too much difficulty, could take care of 1,000,000,000; even if the geometric accretion were to persist at the present rate, Harvard would have her library hatches battened down until the year 2074. After that, of course, she would be back where she is now and would have to double her warehouses every 16 years. But that is not important. The year 2074 is quite as far ahead as anyone now living need worry about.



Detail of entrance to the proposed Charles Hayden Memorial Library

The Librarian's Real Problem

The fault with Rider's proposal is not that the inexorable laws of the geometric progression will finally catch up with it. The real difficulty is that it takes no account of the basic problem of librarianship which is never storage but always use. The problem of library institutions is not to see to it that between them they have in store every piece of recorded information. By the way, we miss this objective by a large margin, even in the opulent United States. The real problem is to make what is in these records quickly available to the scholar, and certainly in his lifetime. Information which never gets out of the printed document and into the mind of a man is useless.

Rider might reply fairly that even the present halting and possibly archaic methods of classifying library contents are hardly understood or utilized at all, even by trained scholars. It is regularly a source of consternation, to those who know what tools are available for reference, to observe that able persons are unaware that the tools exist. These tools can provide veritable palanquins for the lazy even though they are but palanquins and not jet-propelled space ships. Yet only Goucher College gives a serious course in library tools and requires all its graduates to have passed a rigorous examination in their use. At Technology there is little difficulty in persuading the student that it will pay him to make a full study of the slide rule. But what a trivial instrument the slide rule is compared with knowing the combination to the vaults which contain the treasure of man's past thought!

But this essay is not an apology for librarians. There is no justification for the silly canard that they are only happy when they have procured all the books they can get — and have them all safely locked up in the library. They worry about the real problem much harder than their colleagues on university faculties. They worry hard enough; whether imaginatively enough is another matter. One can contest Rider's extrapolation. But even if it be accepted, it is as plain as a pikestaff that a solution of the mere storage problem will do almost no good; that the present library reference methods will be inadequate for such a mass of material as is sure to be produced even if they are better than most people appreciate. The trouble with the Rider proposal, then, is that it faces only part of the difficulty — and the lesser part at that.

Disposal of the Unfit

If Rider's is only a partial solution, one occasionally proposed by natural scientists is no solution at all. The most recent statement of this position is that by Dr. Garrett Hardin in the September, 1946, issue of *The Scientific Monthly*. In a satire, which makes it a little difficult to tell where the author is kidding and where he isn't and approaching the problem from the unilateral position of the natural scientists, Hardin offers a solution which is simplicity itself. The librarian has simply to be ruthless. He must throw away library material and do this much more rapidly than he accumulates it.

It is possibly true that scientific literature has a way of purging itself. A Mendel may come along and his little paper may make obsolete and useless to the scientist the thousands of pages published by the precedent Slawkenbergiuses. From the point of view of a practicing scientist perhaps all this antecedent material could then be burned. Since science has, from time to time, changed its mind about some important matter and backtracked to the concepts of some earlier and possibly "obsolete" individual, the practice of this theory might entail some risk even for science. There is question whether the scientific

thinker would be quite so enthusiastic about such a program as the scientific tradesman might be.

But it is none the less true that a very large percentage of the material which the scientist wants in his daily life will be contained in such summary landmarks, especially when combined with a periodical literature (usually of the last decade) which advances from such a milestone. From time to time the current literature can be totted up again and a new milestone placed. Thus, for science alone, there may be some merit in such a proposal and Hardin may not have been fooling when he made it.

The weakness of such a proposal, of course, lies in the fact that scientific literature is a very small part of all literature. In spite of the present awesome position of science, its writings are by no means the most important of recorded thought. The really frightening thing about the atomic bomb is not that scientific literature has helped us to know too much about nuclear fission, but that other literature has helped us too little to know human relations. Parenthetically, it is discouraging to note that though scientific education was capable of producing the genie of the atomic bomb, it failed to provide a background which would have warned that the world would be too small for evil purposes even if the whole atomic bomb complex were nothing but a bad dream.

No, for all literature the task is clearly not one of throwing away. No one is wise enough or fair enough to undertake such a clean-up task. One can let the case rest on human mental limitations and not adduce the catastrophe which would occur if the task were undertaken by men of prejudice (as are all men) or men of ill-will (as are many men). Hitler, for example, simplified the problem of librarianship for Germany but did not add either to the intellectual stature of his country or to its contributions to human progress and welfare.

If the Western world comes to debacle it will not be because we know too much about atomic bombs but because we do not know enough about the human animal. On this greater problem man's mind has been working since the beginning of time and has been rather fully recording its work since the zenith of Greece. The minds which have worked on it have been no less profound than those which spawned the atomic bomb. They have had to wrestle — and still have to wrestle — with imponderables; imponderables, at least, in any existing scales, and possibly forever imponderables. They have contradicted each other completely and no one has arisen, and perhaps no one will ever arise, to be their Mendel. Not alone the scholar but also the simple thoughtful common man has to work through a great deal of material in such a field to arrive at conclusions which finally are somewhat personal. He cannot arrive at them by contemplation of the periodical literature of the past decade or the past century.

Indeed, if he relies on Lippmann, Pearson, and Pegler, rather than on the literature which has stood the test, he will almost certainly come out with a magnificent lack of proportion; on the other hand, for everything Pegler suggests he can find a more thoughtful and rational exposition in some literature of the past.

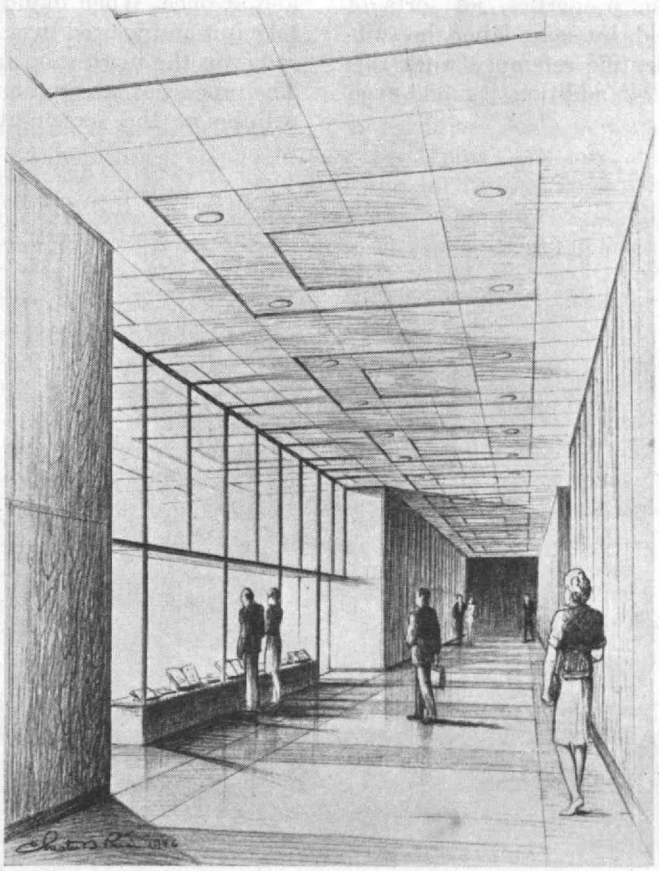
It is, of course, true that it does not require 4,000,000 volumes to yield this sense of proportion. The serried pedestrian rows of the history and record of Clavering St. Mary will not in themselves throw any light; indeed they may obscure it. It is also true that there is more food for thought in the hundred volumes of Dr. Stringfellow Barr than any one mind can digest; it is certain that a list of 5,000 titles could be compiled which would embrace all important thought. It is mathematically demonstrable that, given nothing else to do, no one man could peruse and digest even this fragment of human literary endeavor — this eighth of one per cent of the holdings of Harvard University — in fifty years of steady reading.

Reserved for the Scholar

The rationalization by which universities continue to accession these gigantic collections is that they serve the scholar. On that rationale it is possible to defend the volume which lies on the shelves in the dust for fifty years, if on the fifty-first someone finds it, dusts it off, digs into it, and draws some conclusion from its contents — useful or not. This fifty-year fate is, of course, not unusual in the large library. At the University of Chicago 95 per cent of the books account for but five per cent of the circulation.

One has to look at the word "scholarship" pretty hard. Most of the time it seems to be represented by the trivial production by the candidate for a degree of D.Litt. or Ph.D. Forced to be original, whether he is or not, and in a world where a lot of scholarship has preceded him, he rummages in the dust of the library, digs up some little-used material, and produces an essay of incredibly small import. This type of scholarship is out of date and will, it is to be hoped, ultimately disappear from the university.

When it does, it will have to be admitted that there are not enough true scholars on any one campus to justify



The Avenue of Culture which will join the Charles Hayden Memorial Library with Institute buildings

the maintenance of these Gargantuan holdings, and that there is no particular reason, save that of pride, why a university should force an extramural scholar to come to its particular campus to carry on his work. It will then be possible to think about the sort of university library, coupled with some further extra-university system, that would best serve the undergraduate, the graduate student, then the faculty, and finally the outside scholar wherever he may be.

Something New Must Be Added

None of these, it may be clear, will be well served by an application of Rider's proposal without something more; and all of them will be hurt by an application of Hardin's. For something which will yield more promise we have to turn to the third thinker, Dr. Vannevar Bush,'16, and his article on the Memex in *The Atlantic Monthly* for July, 1945.

Dr. Bush is a thoughtful man and he knows at first hand the possibilities implicit in present-day machinery and especially in rapid selectors and calculators. Leaving out the part which deals with providing a private desk drawer of information for the individual scholar, the Bush proposal amounts to supplying a proper diagram of all knowledge, so coded, that by application of any one of a number of existent, or easily conjectured rapid-scanning devices, the references which the scholar seeks can be picked out from multitudinous references in a very short space of time. On the mechanistic side this is entirely feasible almost at once.

Even on the intellectual side, it is immediately applicable to matters where only factual data is sought. The weight of an isotope, the height of a tower, the alkyl compounds with specific common properties, all sorts of readily classifiable things could, by some labor, be suitably coded. For much of scientific reference work this simple scheme might be useful; in addition, it might even be sufficient.

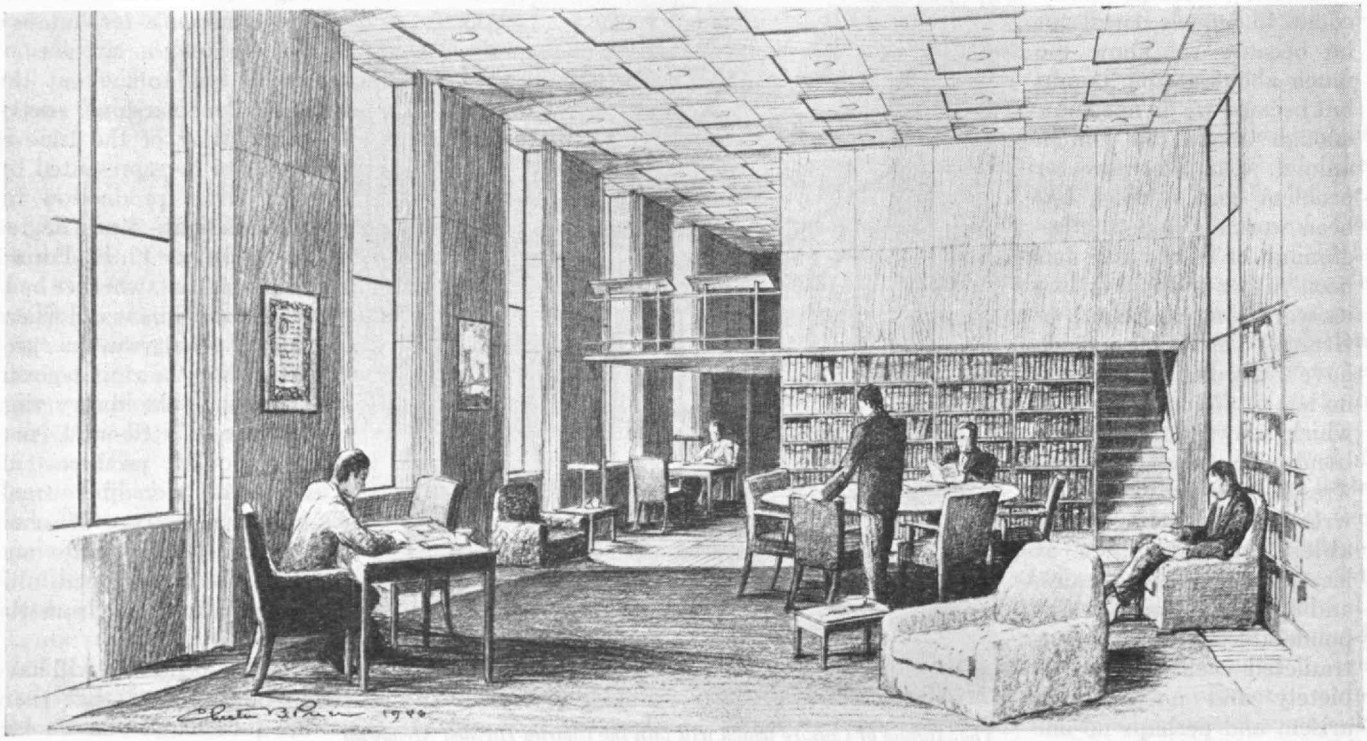
When one passes beyond fact to the area of conjecture or discussion the problem becomes less simple. None the less, Dr. Bush has provided a stimulus which could lead to a grandeur of library service never before seen. To bring it about will require a concatenation of several forces, some very difficult to stimulate, human nature being what it is. Of these factors the mechanical ones are the nearest to being ready for application. As in so many other fields the potentials of apparatus have far outstripped the capacity of human co-operation.

Still, it is not entirely out of the question that these forces might be brought into action; it is, in any event, not idle to hypothesize about them and from the hypothesis to construct the picture of a Wellsian library system, even if with less imagination than Wells would have brought to the conjecture.

Philosophy of New Approach

Let us imagine, then, that all the Brobdingnagian collections have been transferred to two repositories: one, primary and active; the other, duplicate and inert and existing as insurance. On a national basis these can be as large as they need to be and micro-cards for compactness can be adopted or not, as is desirable. After these two major collections have been established perhaps a good deal of the residue throughout the country may be destroyed, although dead storage might be better since disasters have occurred to book accumulations.

The central depository cannot, of course, be anything like a warehouse. It may have to be supplied with a new form of cataloguing having nothing to do with present subject methods but used solely to make it possible for page boy or machine to find a specific volume unerringly and at once. When found the work may be set before a televisor and viewed by a distant scholar over wire or by radio, in the institution from whence the request came. The process of intercommunication by which the scholar will be at the screen at the (*Continued on page 64*)



The general reading rooms, one of which is shown here, are aimed to provide commodious seclusion for study and relaxation

Of Men and Machines

Airplane Attacks on Submarines Have Little in Common with Better Automobile Traffic Systems. Yet, Their Common Element Promises Clearer Insight into Man's Behavior

By Philip M. Morse

IN the last few years the scientists of this country — customarily thought of as residing in ivory towers to contemplate the wonders of nature — were introduced to many new problems and tasks requiring immediate solution. In addition to their normal activities, they were called upon, by the exigency of a national emergency, to assume the responsibilities of research engineer, production superintendent, and administrator. Yet the multiple personalities which many of them bore will be of benefit to them, for our scientists go back to their laboratories with increased administrative experience and a broader understanding of technological-social problems which are bound to be useful in their future work. They have had wholesale opportunity to witness the benefits to be derived when all branches of science are directed toward the solution of a common problem. In the process they have demonstrated that biological techniques and points of view are sometimes helpful in solving problems in physics; that mathematics can be a powerful aid in furthering psychology; that a silver lining in the study of nuclear physics has given medical men new ways to save countless lives; that the method of science is applicable to social as well as to technological problems. More important, their firsthand experience with administrative problems will make them better organizers and managers of their laboratories; it should also make them better citizens.

Perhaps the most useful result which may be expected to come from this large-scale eviction from ivory towers is an increased application of scientific methods to the broader problems now facing the world. Scientists contributed their own points of view and techniques in solving organizational and operational problems of the war; they developed promising methods of analyzing these problems, which, if properly utilized, are bound to have permanent value in peacetime. The application of scientific method to the study and improvement of the operations of men plus machines has come to be called operational analysis or operations research. As the names imply, it is a study of the operations themselves, not of the component equipment or men separately. Its results were of great practical value in the improvement of operations of war; we may expect the same techniques to show equal usefulness in fields of industrial and governmental operations.

The procedure which was developed for studying an operation is an obvious one to the technical man: The operation is analyzed to find out what does happen rather than what should happen; the combined knowledge of physics, chemistry, psychology, and other sciences is utilized to find out why a particular operation occurs the way it does; this deeper understanding suggests possible causal relationships which might be tested by operational experiments, and the finally tested understanding can then be used to modify the operation to give best results under various conditions.

To be of greatest use, operations research must be an experimental, not a historical, science. For this reason the most effective operations research groups during wartime were attached to high command levels, where the broader operational problems arose and where the action necessary to implement an operational experiment could be ordered. In peacetime, also, operations analysts must have direct access to the industrial or governmental official in charge of the operation to be studied, or their work will have little practical value.

Very few persons would quarrel with the program outlined above. In fact, in its general aspects, it has been applied many times in economics, business management, and politics. But a new and significant extension of this general plan, put into effect during the war, brought about highly beneficial results in a critical period when the saving of time was all important. Something new had been added; something new was discovered. The new ingredient was the co-operative effort of teams of specialists, drawn from any and all branches of science. In the solution of important problems, these teams were free to carry on a program of operations in which considerable emphasis was placed on the experimental method, and they combined their knowledge and techniques to achieve the maximum of the desired goal in the shortest period. In short, the new ingredient was merely the effective use of the integrated knowledge of highly trained specialists. The new discovery was that such a program, simple though it appears, involved procedural and organizational problems of considerable difficulty which had to be overcome if the plan were to be at all effective. Once these purely human problems were overcome so that the activities of administrators and operations analysts were harmoni-

In his final report, Admiral E. J. King comments on the usefulness of operations research to the United States Navy. He says, in part: "The late war, more than any other, involved the interplay of new technical measures and opposing countermeasures. In this see-saw of techniques the side which countered quickly, before the opponent had time to perfect the new tactics and weapons, had a decided advantage. Operations research, bringing scientists in to analyze the technical import of the fluctuations between measure and countermeasure, made it possible to speed up our reaction rate in several critical cases. The knowledge resulting from continued cross-check of theory with practice made it possible to work out improvements in tactics which sometimes increased the effectiveness of weapons by factors of three or five, to detect changes in the enemy's tactics in time to counter them before they became dangerous, and to calculate force requirements for future operations."

ously supplemented, astonishing improvements were achieved.

The procedural problems arise in part because administrative officials, military and nonmilitary, seldom realize that many of their problems are amenable to scientific study; they arise also because the scientist, who is to study the operations, must often take a point of view diametrically opposite from that of the administrator who is running the operation. The administrator must often make arbitrary decisions and is usually impatient of skepticism, whereas the scientist must always be skeptical and is often irritated by arbitrary decisions. Yet for operations research to achieve its full usefulness the administrator and his operations research staff must work in the closest partnership. The administrator makes the final decisions but depends on the scientist to give him a deeper insight into the situation before his decision is reached; the operations analyst is free to investigate all aspects of the operation but reports his findings to the administrator for his final action. Such close partnership was eventually achieved in some military staffs here and in England during the war, and it paid large dividends. Similar partnership should be possible in other fields with equally gratifying results.

Measurement, the Basis of Knowledge

One of the important things the analyst brings to the administrator is a quantitative picture of the problem, for one of his first tasks is to measure the operation. At first sight, the obtaining of meaningful numbers with which to measure the success of an aircraft attack on a submarine or of an automobile traffic regulation, for instance, would seem to be a contradiction of terms. We might expect each pilot to have his own method of attack and each driver to exhibit his own reaction to the regulation. It turns out, however, that operations can be measured, for nearly all operations today are those involving men *and machines*, and the machines force regularity on operations involving them.

The uniformity of behavior of equipment and men is not usually apparent until a number of similar operations have been compared, for this uniformity is usually of a statistical nature. For instance, of the U-boats sighted in daylight by British aircraft during the summer of 1941, about 40 per cent could be attacked before they managed to submerge. Fluctuating only between 35 and 50 per cent, this fraction remained essentially constant for nearly two years. When the United States entered the war, sighting reports on this side of the Atlantic showed that for all of 1942 this fraction was between 40 and 45 per cent, even though our type of plane and training methods differed from those of the British. Once it was discovered that the attack-sight ratio held constant for reasonably long periods of time, the optimum ordnance for submarine attacks could be predicted with considerable accuracy. Furthermore, it became possible to determine the value and relative advantage of plane attacks on surfaced submarines, compared to other kinds of military operations, the probability of success for which could likewise be ascertained.

Other operational quantities which remained remarkably constant were the ratio of fighter planes lost to enemy fighters shot down, and the number of ships in a convoy sunk by a single attacking submarine. Similar constants must be inherent in traffic operations, in rail transportation, and in public housing, to name a few peacetime examples.

The constancy (and therefore predictability) of operations involving men and equipment is at least partly the result of the machinelike manner in which men are forced to act in dealing with mechanized equipment. Such behavior may be deplored by poets but it should be the basis of hope for social scientists, economists, and systems engineers. It is important in that, within certain limitations, the behavior of men and machines can be experimented with, measured, computed, and predicted. Viewed from this more general point of view, the technique of operations research can certainly be applied to the study of peacetime operations.

Such studies should draw upon both the physical and biological sciences as well as on the physical sciences and mathematics, particularly the calculus of probabilities. The laws governing the sighting of a submarine by an aircraft observer depend upon the contrast between the normal ocean surface and the wake of the submarine, the optical transmission properties of the atmosphere, the methods by which a person's eye scans a large area, the sensitivity of the eye retina to contrast, and the altitude and speed of the plane. Some of these quantities are physical, some physiological; they all are measurable. The sighting of the oncoming aircraft from the submarine depends on a similar set of physical and physiological quantities. The relationship between these two sets of quantities determines the fraction of U-boats which have insufficient time to submerge before the aircraft attacks them.

Photo by Harold M. Lambert

Nearly all operations today are those involving men and machines — and machines force regularity on operations involving them

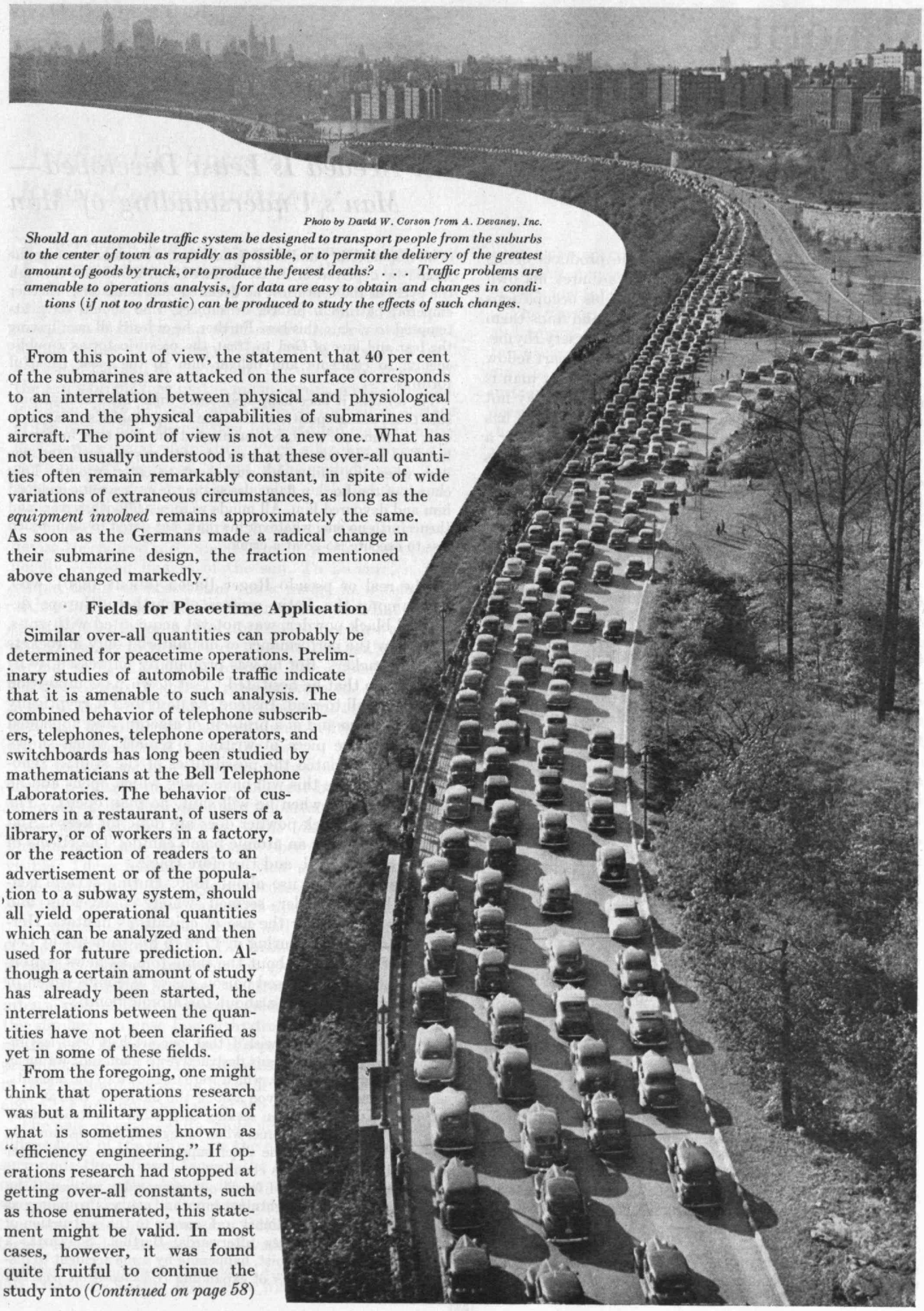


Photo by David W. Corson from A. Devaney, Inc.

Should an automobile traffic system be designed to transport people from the suburbs to the center of town as rapidly as possible, or to permit the delivery of the greatest amount of goods by truck, or to produce the fewest deaths? . . . Traffic problems are amenable to operations analysis, for data are easy to obtain and changes in conditions (if not too drastic) can be produced to study the effects of such changes.

From this point of view, the statement that 40 per cent of the submarines are attacked on the surface corresponds to an interrelation between physical and physiological optics and the physical capabilities of submarines and aircraft. The point of view is not a new one. What has not been usually understood is that these over-all quantities often remain remarkably constant, in spite of wide variations of extraneous circumstances, as long as the *equipment involved* remains approximately the same. As soon as the Germans made a radical change in their submarine design, the fraction mentioned above changed markedly.

Fields for Peacetime Application

Similar over-all quantities can probably be determined for peacetime operations. Preliminary studies of automobile traffic indicate that it is amenable to such analysis. The combined behavior of telephone subscribers, telephones, telephone operators, and switchboards has long been studied by mathematicians at the Bell Telephone Laboratories. The behavior of customers in a restaurant, of users of a library, or of workers in a factory, or the reaction of readers to an advertisement or of the population to a subway system, should all yield operational quantities which can be analyzed and then used for future prediction. Although a certain amount of study has already been started, the interrelations between the quantities have not been clarified as yet in some of these fields.

From the foregoing, one might think that operations research was but a military application of what is sometimes known as "efficiency engineering." If operations research had stopped at getting over-all constants, such as those enumerated, this statement might be valid. In most cases, however, it was found quite fruitful to continue the study into (*Continued on page 58*)

Minority Report

By Tenney L. Davis

Of All Knowledge, That Most Needed Is Least Developed—Man's Understanding of Man

MAN is a being who admires the products of his own ingenuity. Moreover, he admires his own ingenuity as well. He pauses in his occupations from time to time to look upon his works and finds them good. Then, like little Jack Horner, in the nursery rhyme, he perceives and acknowledges what a really smart fellow he is. Here, if he were simple he would stop. But man is complex, and commences to wonder whether he may not perhaps be too smart for his own good. Thus far he has gone with the atomic bomb. He was smart to discover a means of access to the energy of atomic fission. He was smart, so he thinks, to invent the atomic bomb; but he begins to think that he might have been smarter not to have made use of it, and to wonder whether he hasn't invented a monster which will swallow him up. He has become fearful of his own ingenuity, afraid of his cleverness, apprehensive lest his ingenuity fail to provide him with defenses against the weapon which it has contrived.

The Syracusan scholar, who discovered the so-called Pythagorean theorem, relative to the squares on the hypotenuse and on the sides of a right-angle triangle, felt that he had pried too far into the secrets of the gods, and committed suicide by throwing himself from a high place into the sea. Had he allowed himself to live, there is no telling what blasphemies he might have attempted.

Greek fire which the engineer, Kallinikos, brought to Constantinople about 672 A.D., gave its possessors an immediate and decisive advantage over their enemies. It became the top secret of the ancient world, and was so effectively guarded that it was never revealed. Greek fire secured victories for the Byzantines during seven centuries or longer, and we do not now know with certainty what it was or how it was used. Good secrets are, by tradition, divine secrets, and divine secrets have special advantages for safety and security. Some of these are evident in the advice which the Emperor Constantine VII (Porphyrogennatos, 905–959) gave to his son Romanos in the treatise "De Administrando Imperio":

> Thou ought above all other things to give care and attention to the liquid fire which is thrown by means of tubes; and if anyone dares ask it of thee, as has often been done of us, thou ought to repel and reject the request by responding that this fire was shown and revealed by an angel to the great and holy first Christian emperor, Constantine. By this message and by the angel himself he was enjoined, according to the authentic testimony of our fathers and of our ancestors, not to prepare this fire except for Christians only, and only in the imperial city, and never otherwise, not to transmit it and never to teach it to any other nation whatsoever. Then the great emperor, as a precaution against his successors, caused imprecations against the man who should dare to communicate it to a foreign people to be engraved on the holy tablet of the church of God. He ordered that the traitor should be held unworthy of the name of Christian, of all responsibility and of all honor; that if he had any office, he should be deprived of it. He declared him anathema through the cycle of the centuries; he declared him infamous, whether emperor, patriarch, prince, or subject, who should have attempted to violate this law. Further, he ordered all men having the fear and love of God to treat the prevaricator as a public enemy, to condemn and deliver him to the most frightful tortures.
>
> For all this, it once happened, since wickedness always pursues those in high positions, that one of the empire's great, won over by immense gifts, communicated this fire to a foreigner; but God could not see such an atrocity unpunished, and one day, when the guilty one was about to enter into the holy church of the Lord, a flame descending from heaven enveloped him and devoured him. All minds were seized with terror, and thenceforth no one, whatever his rank, has dared to plan, much less to execute, so great a crime.

The real or pseudo Roger Bacon (about 1250), who, first among the Latin writers of northern Europe described black powder, was not yet acquainted with guns, and knew the performance of his material only in rockets and firecrackers. But he was profoundly impressed by it; so much so that he hesitated to set down its composition plainly for all to read. Instead, he described it cryptically in an anagram and in a problem of algebra, and appended to the obscure piece of writing a remark which shows that he appreciated the possibilities of the stuff: "Whoever will rewrite this will have a key which opens and no man shuts, and when he will shut, no man opens." The things which black powder does are done for keeps. And this is as much as an atomic bomb can do. The effects of explosives are final, and therefore tragic.

Guns came into use about 1350. During several centuries black powder seemed wholly marvelous and scarcely suitable for the use of chivalrous fighters. Herman Boerhaave, lecturing in 1732 to his students in Leiden, discussed it in about the same tone as news writers of 25 years ago discussed poison gas or as congressmen in 1946 have been talking about the atomic bomb:

> It were indeed to be wish'd that our art had been less ingenious in contriving means destructive to mankind; we mean those instruments of war, which were unknown to the ancients, and have made such havoc among the moderns. But as men have always been bent on seeking each other's destruction by continual wars; and as force, when brought against us, can only be repelled by force; the chief support of war, must, after money, be now sought in chemistry.
>
> Roger Bacon . . . had found out gunpowder, wherewith he imitated thunder and lightning; but that age was so happy as not to apply so extraordinary a discovery to the destruction of mankind. But two ages afterwards, Barthol. Schwartz, a German monk and chemist, happening by some accident to discover a prodigious power of expanding (*Concluded on page 62*)

By Walter O. Roberts

Artificial Eclipses of the Sun and Their Importance to Radio Communication

ECLIPSES of the sun are rare astronomical events of great scientific value. Only when the sun, the moon, and the earth are very nearly in a straight line can eclipses of the sun or moon occur. For study of the atmosphere of the sun, an even rarer circumstance than a simple eclipse is necessary. That eclipse must be a total eclipse of the sun by the moon. The entire obscuration of the sun's bright face by the moon occurs, on the average, less than once per year anywhere on the entire surface of the earth, and then at best for less than eight minutes in a narrow band of totality which stretches across the earth, usually from end to end of the sunlight zone. At a given point of earth an eclipse occurs, on the average, only once in each 360 years.

For more than 100 years astronomers have sought to devise specialized instruments for the production of artificially eclipsed images of the sun. To be sure, it is a simple thing to occult the sun's image in a telescope with a small disk of steel of appropriate size. But unfortunately all attempts prior to 1930 to produce artificial eclipses failed to reveal any trace of the sun's tenuous corona, so spectacular at eclipses. The difficulty lies in the tremendous brightness ratio between the sun's luminous surface, and the faintly incandescent atmosphere of the sun. That difficulty has been circumvented in the modern coronagraph in a fascinating way.

To today's astrophysicist an eclipse of the sun is not simply a natural phenomenon of great beauty. It is also an event of immense scientific importance, for then the sun's atmospheric features — the chromosphere, the prominences, and the corona — become spectacularly visible. These features are of vast significance to our understanding of the physical processes within the sun and the effects of solar variations upon the earth.

A glimpse of the prominences and corona during total eclipse is a thrilling sight. The brilliant, sharply defined, irregularly shaped prominences glow with a purplish hue owing to the presence of strong spectral lines, the intense pair of lines of ionized calcium in the violet, and the similarly intense line of hydrogen (hydrogen-alpha) in the red. These gases are the primary constituents of prominences, and of the chromosphere, which appears to be a brilliant low-lying layer of prominence gases just above the luminous surface of the sun.

The pale greenish-white, more nearly symmetrical, and diffuse light of the corona, on the other hand, completely surrounds the eclipsed face of the sun as a more or less uniform halo upon which are superimposed long faint streamers of light. The coronal gases consist in part, as the recent identifications by Edlén[1] indicate, of very highly ionized iron, calcium, and nickel. But the coronal light, upon spectral analysis, shows not only the lines of the highly ionized gases, but also a continuous spectrum of very low intensity, the origin of which is uncertain.

The physical conditions evidenced by the prominences and corona differ enormously. A detailed unraveling of the causes and effects of these differences is one of the aims of the establishment of artificial eclipse-producing instruments. By further study we hope to improve our understanding of the association between complex events in the sun and their subsequent influences upon earthly life and activity.

The prominences and corona in the sun's atmosphere are highly tenuous clouds of gas in a condition of physical equilibrium that is very hard to explain. The boundary of the sun's surface is sharply defined. The narrow layer of the chromosphere, directly above this sharp surface, is irregular at its upper edge, and emanates a bright-line spectrum in contrast with the continuum of the sun's body. The thousands of absorption lines in the sun's spectrum undoubtedly arise below the chromosphere in the boundary between the sun's surface and the lighter gases of the atmosphere. Above the chromosphere, multitudes of tiny short-lived spike-like prominences may be seen, as well as an occasional larger, more brilliant prominence. The prominences, strangely enough, are not at all diffuse, but possess the most extraordinary wealth of sharp detail. In addition, all prominences are in motion (sometimes with velocities of several hundred miles per second) under the action of unknown forces.

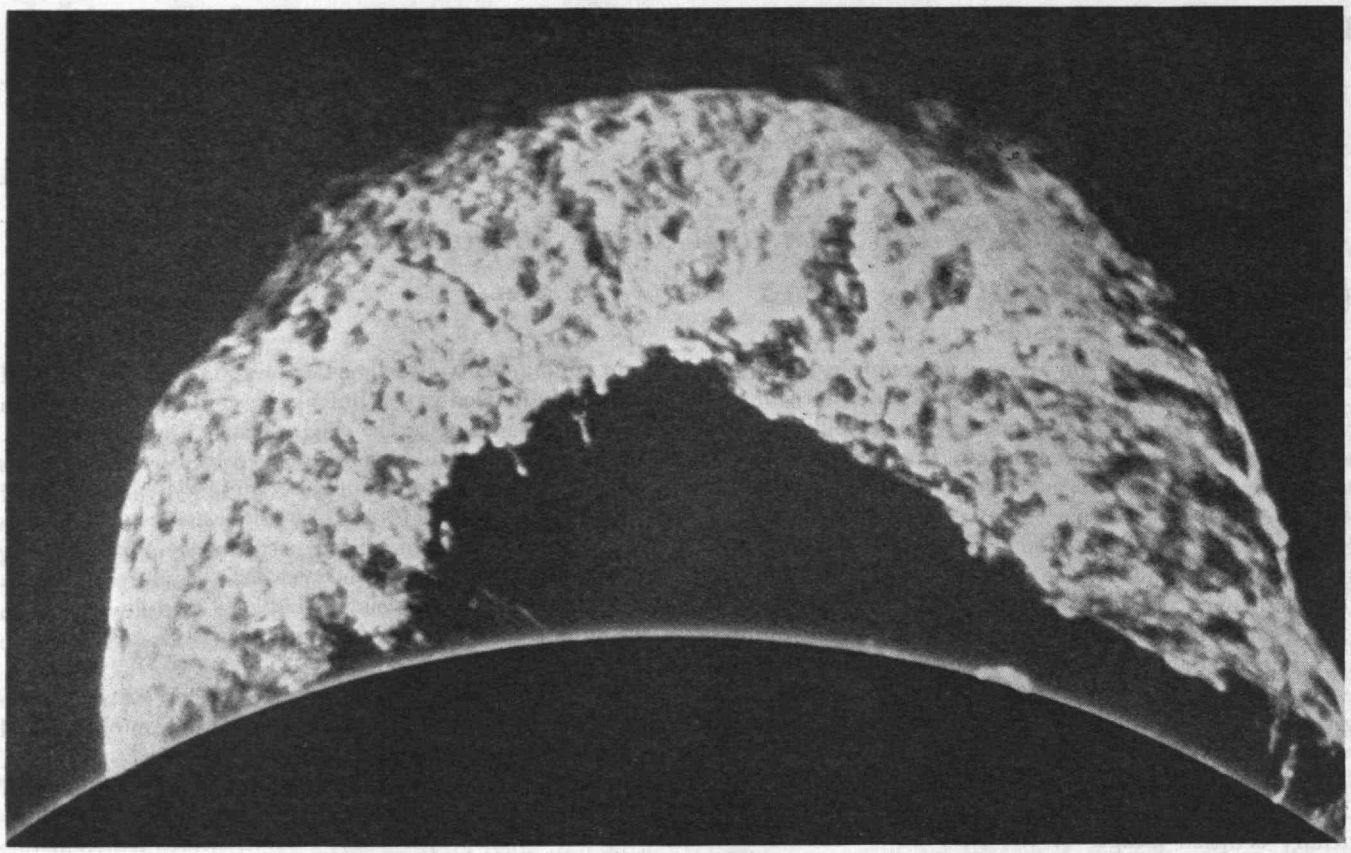
The corona, likewise, possesses a wealth of detail, although its general shape is more nearly uniform than the prominence configurations. It resembles a vast halo of light. The excitation temperatures required to produce the highly ionized coronal spectrum lines are measured in millions of degrees — much higher than the surface temperatures of the sun itself, and much higher than the prominence excitation. The reason for this high temperature of the corona is one of the great mysteries of the sun which we are striving to solve, and with the solution will come many interesting corollary facts about the sun.

Producing "Artificial Eclipse"

The first successful observations of prominences without a solar eclipse were made independently by Jannsen and Lockyer [2] in the year 1868. They were able to view the prominence spectrum and to get some idea of the prominence shape and size by widening the opening of an ordinary spectroscope slit placed just at the edge of the image of the sun in a small telescope. The reason for success was that the prominence lines were sufficiently intense to register when the spectral zone admitted to the

[1] Edlén, Bengt, *Arkiv för Matematik, Astronomi och Fysik*, April, 1941. (Stockholm, Sweden: Almqvist and Wiksells Boktrycheri A-B.)

[2] *Eclipses of the Sun* by Samuel A. Mitchell. (New York City: Columbia University Press.) See page 137.



Prominence of June 4, 1946. This is the largest prominence ever photographed with the coronagraph at Climax. The prominence was eruptive, and disappeared out of the camera picture very shortly after this photograph was made.

image was restricted, and the diffused background light from the sun's continuous spectrum was thus eliminated by the dispersing prism of the instrument. Within about 20 years it became possible to obtain photographs of prominences of very good quality.

The modern form of the apparatus, called a spectroheliograph, is now used at a number of observatories throughout the world. One of the most highly developed of these is located at the McMath-Hulbert Observatory at Lake Angelus, Michigan, where the apparatus has been perfected to permit rapid-sequence photographs of the prominences which can be viewed in motion with a motion picture projector. Spectroheliographic studies at the McMath-Hulbert Observatory have also been extended to the remarkable features of the sun's surface, the "plages" and "filaments" which can be viewed in monochromatic light.

The corona, however, has not yielded to simple spectroheliographic investigation. Seventy years passed between Jannsen's first prominence observation without eclipse and Lyot's first detection of the corona without eclipse. The story of the repeated attempts of many of the greatest astronomers of all times to photograph the corona without an eclipse is a fascinating one. Indeed, so discouraging was the repeated failure of astronomers to photograph either the corona or its spectrum that in 1929 the following statement appeared in the technical literature: "It is completely hopeless to try to photograph the corona, except during eclipse, even in the farthest red, or from high mountains."[3]

One year later, in 1930, Dr. Bernard Lyot, of Meudon Observatory in France, succeeded where all others had failed. At the suggestion of Professor Henry O. Barnard, Lyot had investigated all sources of unwanted sunlight scattered into the image of the artificial eclipse produced when an occulting disk is placed at the focus of a telescope lens. Lyot then devised ways to eliminate or vastly reduce all of these sources of unwanted glare. The result was a successful coronagraph. A diagram of the Lyot-type coronagraph [4] is given on page 35.

Lyot had found that ordinary astronomical instruments diffused many hundreds of times the amount of light that the corona radiated into them. He then set about to design a telescope, now known as the Lyot-type coronagraph, which circumvented the objectionable diffusion present in all preceding types of telescopes. Lyot's work in developing this instrument is one of the outstanding accomplishments in experimental astronomy.

Importance of Coronagraph

The advantage of a coronagraph over observations at total eclipse is obvious. With a coronagraph we may observe the corona and prominences at any time when the sky is clear, and by using networks of coronagraphs it should be possible for us to keep continuous records of the activity of the sun's atmosphere.

Features of motion which could never be detected during the brief moments of a solar eclipse are strikingly evident in rapid-sequence motion pictures covering several hours. A coronagraph allows observation of the very faintest prominences and of the brighter portions of the

[3] H. Kienle and H. Siedentopf, *Astronomische Nachrichten*, Volume 235, p. 10, 1929. (Kiel, Germany: Georgoheim.)

[4] Lyot, Bernard, *Monthly Notices of the Royal Astronomical Society*, Volume 99, p. 580, 1939. (London, England: Royal Astronomical Society.)

corona, but as yet no instrumental means can show us the fainter extensions of the corona that may be seen so readily during eclipses.

Still further, a coronagraph is an instrument of very critical sensitivity to dust, atmospheric haze, and lens imperfections of certain types. Its successful operation demands skies which are of utmost purity — and this usually requires remote, high altitude locations. But in spite of its temperamental qualities, the coronagraph, when equipped with the new birefringent crystal filters (which isolate narrow spectral bands of light) becomes one of the most powerful astronomical tools ever devised.

Several coronagraphs now operate in various parts of the world. In addition to Dr. Lyot's powerful instrument on the Pic du Midi in southern France, there are two other European coronagraphs. One is located in Switzerland, and the other, in Germany, was established during the war by the German Luftwaffe.

In the United States Dr. Donald H. Menzel, a native of Colorado, was largely responsible for establishing the coronagraph of the Harvard College Observatory at Climax, Colorado, in 1940. At an elevation of 11,500 feet the Harvard coronagraph is the highest permanent astronomical station.

For photographing in the light of narrow spectrum lines a spectroheliograph could be used. With the Harvard coronagraph, however, a newly developed astronomical tool known as the birefringent filter[5] is used. This remarkable instrument acts as a filter which is practically monochromatic. The one now in use at Climax transmits a band of color only about four angstrom units wide, as compared with several hundred angstroms for the best colored-glass filters. The filter was made by Dr. John W. Evans, who has developed the theory of such instruments to a considerable degree, and has designed some still sharper and more versatile filters which we hope soon to be able to build. Briefly, the filter consists of a multiple-layer sandwich of polaroid and quartz. Each quartz unit is cut so that it produces constructive light interference for some given set of wavelengths which pass through the filter freely, and destructive interference which stops the transmission of light of intermediate wavelengths. A number of such units are made so that their constructive interference wavelengths occur for only one or a few wavelengths; for all other wavelengths destructive interference stops the light in one or another layer of the filter sandwich.

The remarkable features of such a unit are that it can be built into a small container only six inches long, and that when it is placed in front of the film in a coronagraph it will act in much the same fashion as a spectroheliograph. Its advantage over a spectroheliograph is the absence of moving parts and adjustable narrow slits. The units so far completed do not possess quite the versatility of a spectroheliograph, but for application in a coronagraph their simplicity and compactness are great advantages. Moreover, the image quality which can be transmitted through birefringent filters certainly equals or exceeds that of most spectroheliograph apparatus.

The prominence photograph accompanying this article has been taken with the coronagraph with the birefringent filter. Lyot has also designed and used such filters, and much credit for their development must be given to him. With his apparatus he has taken some remarkable sequence photographs of the corona. Dr. Edison Pettit at Mount Wilson Observatory likewise uses equipment similar to the unit which we employ.[6] Dr. Pettit's apparatus has been used exclusively for prominences.

Results of Research with the Coronagraph

The applications of the results of a coronagraphic study of the sun's atmosphere are many, ranging from results of immediate practical importance to results of long-range fundamental scientific significance.

The sun is the source, directly or indirectly, of almost all of the energy utilized by man on earth. As a consequence, the variability of the sun is a vital concern to man in his adjustment to life on this wandering planet.

The fundamental position of solar energy in regulation

[5] Evans, John W., *Publications of the Astronomical Society of the Pacific*, Volume 52, p. 305, 1940. (Stanford University, California; Stanford University Press.)

[6] Pettit, Edison, *Publications of the Astronomical Society of the Pacific*. Volume 53, p. 171, 1941. (Stanford University, California: Stanford University Press.)

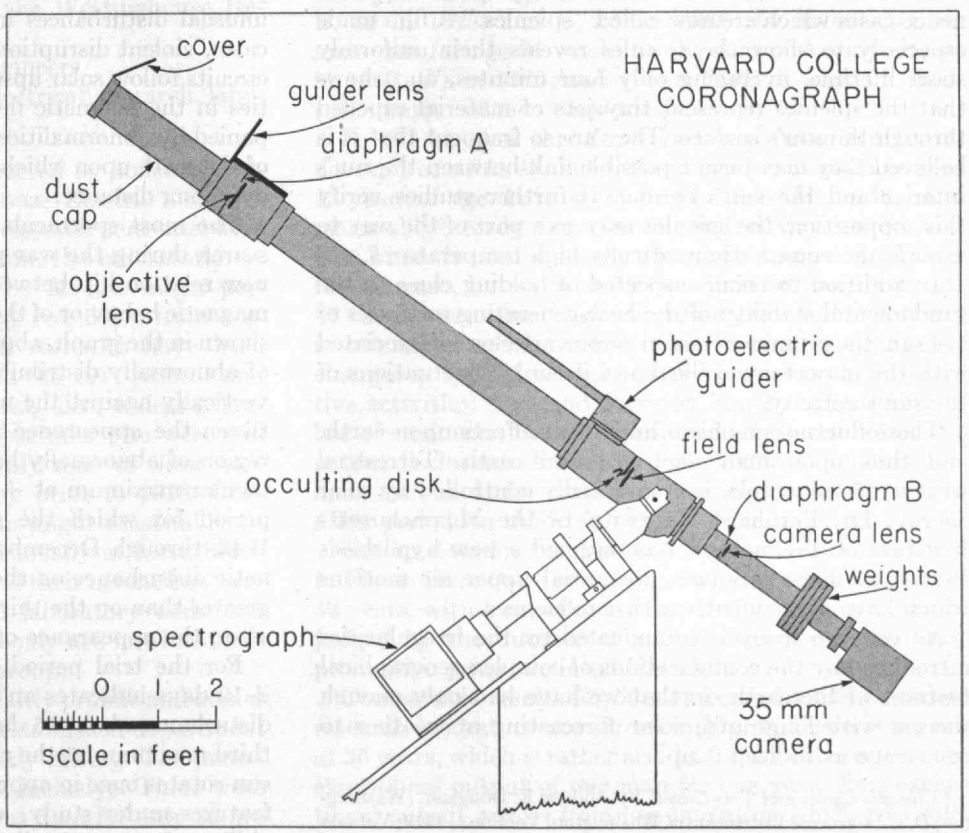
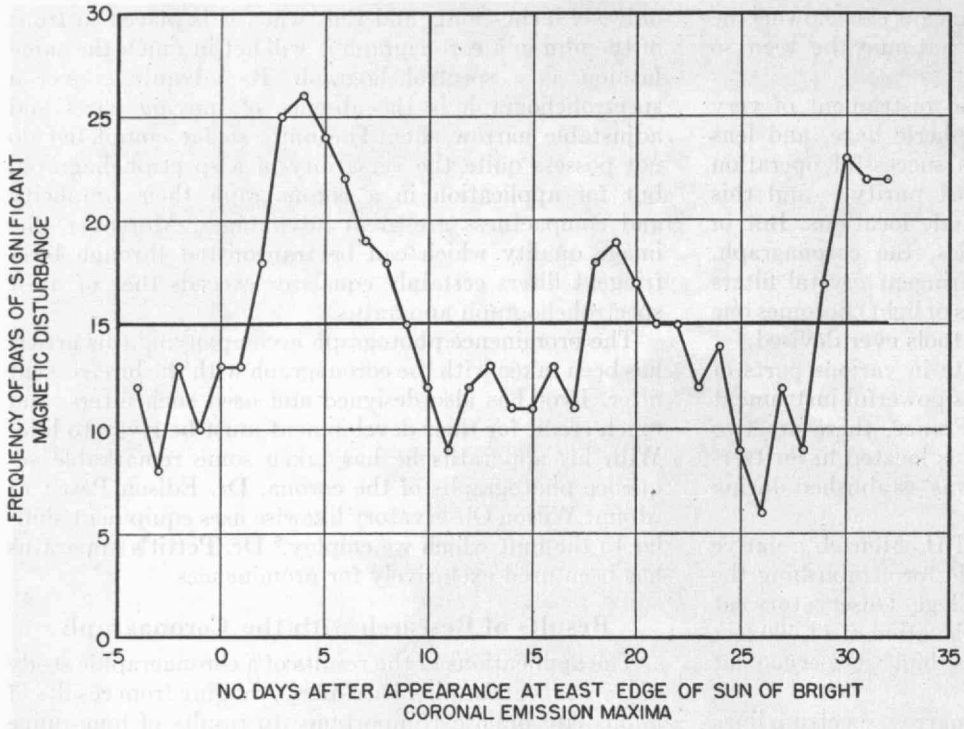


Diagram of the essential elements and general construction of the coronagraph devised by Lyot



Correlation of geomagnetic disturbances with areas of bright coronal emission on the sun

of human activity renders important all knowledge concerning the sun. The prominences and corona, being accessible to observational study (unlike the interior of the sun) and being closely associated with basic physical conditions, form two major objects of solar investigations.

As an example of the unexpected results of coronagraphic studies of the prominences, it is possible to point out the discovery in 1943 of an entirely new type of prominence activity of very short duration. Many prominence films showed, on some frames, tiny spikes of prominence gases which are now called "spicules." A film made especially to show the spicules reveals their uniformly short lifetime, averaging only four minutes, and shows that the spicules represent tiny jets of material expelled through the sun's surface. They are so frequent that it is believed they may form a possible link between the sun's interior and the sun's corona. If further studies verify this supposition, the spicules may go a part of the way to explain the corona's fantastically high temperatures.

In addition to being suspected of holding clues to the fundamental stability of the heat-generating processes of the sun, the prominences and corona are closely associated with the important cyclical and irregular fluctuations of the sun's activity.

These fluctuations have important effects upon earth, and thus upon man's activities on earth. Terrestrial weather, for example, is undoubtedly controlled by solar energy. Dr. Bernhard Haurwitz, of the Massachusetts Institute of Technology, has outlined a new hypothesis that solar flares produce substantial upper air motions which have subsequent weather influences.

As yet, the study is complicated by the irregularities introduced by the configurations of complex geographical features of the earth, so that we have had only enough success with long-range solar forecasting of weather to encourage us to keep it up.

But there is clear evidence that solar changes affect weather, or, at least, growing conditions. The pioneering work of Dr. Andrew E. Douglass,[7] for example, shows that the rate of growth of trees, as evidenced by the patterns of annual growth rings, is directly associated with the well-known 11-year solar activity cycle, which has been popularized as the "sunspot cycle."

The field of solar-terrestrial correlation is an important one and a dangerous one. The establishment of causal relationships among imperfectly associated physical phenomena is difficult. The interpretation of apparent associations of various effects on earth of the sunspot cycle must be approached with greatest caution.

Another highly important relationship between the changes in the sun and influences on earth has been established beyond doubt, however. This is the relationship of solar activity to the electrical and magnetic conditions of the earth and its atmosphere. The needle of a highly sensitive magnetic compass, for example, varies in strange harmony with fluctuation of the radiation from the sun.

The occurrence of brilliant northern lights, an electrical phenomenon of the earth's atmosphere, is stimulated by unusual disturbances in the sun's equilibrium. In some cases, violent disruptions of telegraph and electric power circuits follow solar upsets. In most cases any abnormalities in the magnetic fields of the earth are also accompanied by abnormalities in the behavior of the ionosphere of the earth upon which depends all radio communication over long distance.

The most spectacular result of our coronagraphic research during the war years has been the discovery of a new relationship between the sun's corona and the geomagnetic behavior of the earth. The nature of this result is shown in the graph, above, in which the frequency of days of abnormally distributed magnetic conditions is plotted vertically against the number of days which elapsed between the appearance at the east edge of the sun of a region of abnormally bright coronal emission. The spectacular maximum at +4 days indicates that, in the test period for which the graph was constructed (August, 1942, through December, 1943), the probability of magnetic disturbance on the fourth day was about 2.5 times greater than on the third day before, or the eleventh day after, the appearance of the maximum.

For the trial period, the second maximum shown at +19 days indicates an increased probability of magnetic disturbance about 15 days after the main maximum. The third maximum at the right results from the fact that the sun rotates once in approximately 27 days for the coronal features under study, and from the fact that the probability of magnetic disturbance (*Concluded on page 56*)

[7] *Climatic Cycles and Tree-Growth* by Andrew E. Douglass. (Washington, D. C.: Carnegie Institution of Washington. Volume 1, 1919; Volume 2, 1928; Volume 3, 1936.)

Age of Invention

Training and Maturity Yield Dividends at the Patent Office with Peak of Inventive Productivity Occurring for Men in Their Forties

By Thomas Spooner

"INVENTIONS are usually made by men under 40, often without scientific training." This remark is reported to have been made by Sir James Swinburne, formerly President of the British Institute of Plastics Industry. It intrigued me. Is this true, and if so, what of the implication that men lose their mental creative powers before they are 40 years old? Does Sir James refer only to those inventions which have been of great commercial or social importance, or to inventions in general?

After reading Sir James's remark, it occurred to me that patent records of industrial firms might show something interesting in substantiation or refutation of the statement. Buried in the records of industrial organizations are many data of immense interest if one only makes the effort to unearth them.

Many firms follow the practice of recording inventions made by their scientists and engineers. Usually, a complete description is prepared for company files and for future action. This is known as a patent disclosure. It is these disclosures which will supply much of the data for this paper. The records of three groups have been examined:

1. Engineers and scientists of the Westinghouse Research Laboratories
2. A typical group of design engineers
3. Engineers of a large non-electrical research laboratory

In 1916 a new building was erected to house the research activities of the Westinghouse Electric Corporation. A few of the already existing research personnel were transferred to the new building from the laboratories at the East Pittsburgh Works but by far the larger percentage was gradually built up by recruiting from universities and industry. Invention statistics have been gathered, therefore, beginning with the 1917 records and extending through 1938. In general, also, unless otherwise stated, the results are for those men who were still with the organization in 1938. Only nine of these men were associated with the company prior to 1916. Only those engineers * are included who might reasonably be expected to make inventions occasionally at least. Some of these were on analytical work and their inventions were very few. Recent employees and laboratory assistants who were or routine testing work only are not included: 55 engineers are included in this group.

The design group consisted of a fairly prolific and homogeneous set of engineers in a long established department where new problems were constantly arising. The period covered is also from 1917 to 1938, inclusive. There were 45 engineers in this department but data for only 36 are used since the other nine made no inventions during their period of employment because of the routine nature of their work or inherent lack of inventive ability.

The third group consisted of the present research engineers of a large non-electrical research laboratory. There were 59 men in this group and the period covered is from 1919 to 1939, inclusive. The starting time was two years later than for the other two groups, and to partly compensate this, the time was extended through 1939, one year later than applies for the other two groups. By stopping at 1939 the variabilities due to the war effort are excluded.

Total Patent Disclosures

The curves of Fig. 1 show the average number of patent disclosures per year, as a function of the inventor's age, for 55 engineers of the Westinghouse Research Laboratories. This graph covers the whole period of service for each man since 1917. Of course, most of the men considered came to the Laboratories subsequent to 1917.

It will be understood that during the period of his employment, each man's inventive output is included for each year of his age. If man A was 35 years old in 1920, B, 35 in 1925, and C, 35 in 1930, the inventions per man-year for age 35 would be the sum of A's inventions in 1920, B's in 1925, and C's in 1930, divided by three (the number of men considered).

It will be seen that for this group inventive genius does not cease at 40, but rather reaches the maximum at 43 years of age. It is interesting to note the gradual and reasonably steady increase in productivity up to that age. There is then a decrease somewhat more rapid than the increase, but even at 59 the curve is above zero. At 43 the increase due to greater knowledge and experience is counterbalanced by decreasing ingenuity or by the changes in type of work, such as from research to executive activities. A second curve on Fig. 1 shows the number of engineers, by age distribution, responsible for the patent disclosures. From this dotted curve it appears that more men apply for patents in their early thirties than at other periods in their life.

Similar data for the group of design engineers is shown in Fig. 2. Here there is a peak at 37 years and another at 42 years, with a rapid dropping off after 44 years. Again, judged by the number of patent disclosures, the most productive years are in middle life.

Comparable results for 59 members of a non-electrical research laboratory are shown in Fig. 3. There is a peak at 30 years, which is rather accidental since it is due to the exceptional output of one man for one year. This exceptional output results from one invention which was split into a considerable number of allied inventions. The

* The term *engineers* includes scientists.

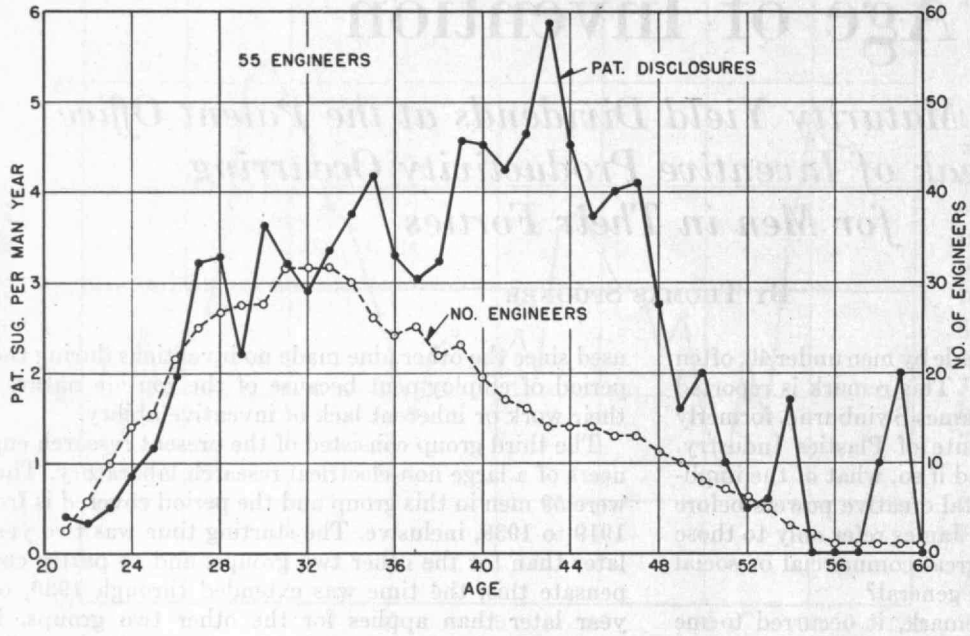


Fig. 1 — Age distribution (light line) and average number of patent disclosures per year, as a function of inventor's age (heavy line) for 55 engineers of the Westinghouse Research Laboratories.

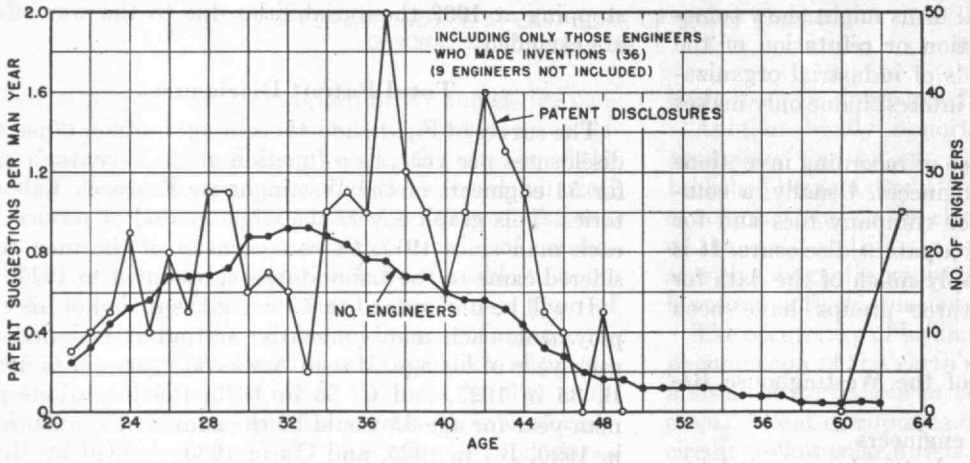


Fig. 2 — For 36 design engineers in the field of electrical engineering, the heavy curve shows age distribution and the light curve indicates the average number of patent disclosures per year for the age of each inventor.

second peak is at 42 years. The high peaks for men in their fifties are not particularly significant, quantitatively, since so few men are involved. They do show, however, that inventive ability does not become atrophied among the older men.

The men in this group were concerned primarily with metallurgical problems. Their inventions are probably best described as discoveries based on controlled experiments. Experience is a large factor in this type of invention and the age limits would naturally be considerably higher than for inventions resulting from a flash of genius.

The combined results for the three groups are plotted in Fig. 4 which gives a truer picture than the first three diagrams, since the results apply to a larger and therefore more representative group. The highest peak of patent disclosures is at 43 years, with the second highest peak at 47 years. The rapid rise up to 27 years and the rapid falling off after 48 years should be noted. The gradual rise from 27 years to 47 years is also significant.

Prolific Inventors

It is instructive to consider the inventive output of certain individuals who are either prolific inventors, or whose inventions have had great commercial value. One engineer is in a class by himself, both as to number of patent suggestions and also as to the commercial value of his patents. It is interesting to note also that he was trained as a mathematical physicist, which makes his record all the more remarkable or significant. Even at 48 his productivity is higher than that of any other man at any age. While his peak output was reached at the age of 27, which is uncommon, his patent productivity has remained nearly constant and very high from age 34 to 48.

Another man had a very low output up to 32 years of age but for the next several years has shown a steadily increasing rate of invention.

A third engineer is interesting. Due to a change of work and added executive responsibility, his inventive output gradually decreased to zero. Largely as a result of a second change, to more nearly his original status, this man's inventiveness at the age of 46 returned to nearly its former high value, and has since been sustained.

Another engineer is responsible for some very useful development work which was long and laborious and resulted in comparatively few patents. A few of these, however, were quite valuable. He reached his peak of productivity at 47.

An individual's inventive output often shows a number

of peaks and valleys with the years. These are the result of changes in status of major activities. After a burst of invention, an engineer often must pause and consolidate his ideas by intensive development leading toward commercialization. During such periods, invention may become temporarily dormant.

An examination of the age for maximum productivity for a group of prolific engineers is interesting. The records of 22 of the more prolific inventors in the three groups of men were studied and the results plotted in Fig. 5. Each block corresponds to one inventor. When two equal maximum values occurred at different ages, one-half was assigned to each age which accounts for the four half heights or square blocks. One man with a maximum at 30 years also had productivity values as high at 42, 43, and 44 years. The concentration at 43 years is, of course, accidental since these maxima might just as well have occurred at ages slightly removed from this value. Each of the three groups of engineers shows high productivity values at 43 years of age. It is interesting to note that just as many maxima occur above the 39–40 point as below.

The genius type of inventor is perhaps more likely to reach his highest productivity at an early age, whereas the normal engineer will reach his best output toward the middle of his career.

Effect of Economic Conditions

A study of patent suggestions as a function of the calendar year is instructive. Some data which apply to all of the Westinghouse research engineers for each particular year are given in Fig. 6. It will be remembered that the data for the previous curves applied only to those men who were on the employed roll in 1938. The curve showing the patent suggestions per engineer per year is the most significant. In 1917, the staff consisted of a few carefully selected men of the scientific type who were full of enthusiasm and ideas. Their patent suggestion productivity was quite high. Later their time was spent in working out the details of their inventions and this required additional men to do work of the more routine type. While the total patent suggestions remained about constant, the number of patent suggestions per man decreased in the few years immediately following the organization of the Westinghouse Laboratories. Later, as the engineers gained more experience and contacts, the patent suggestions (both total and per man-year) increased until 1922. It will be remembered that in 1921

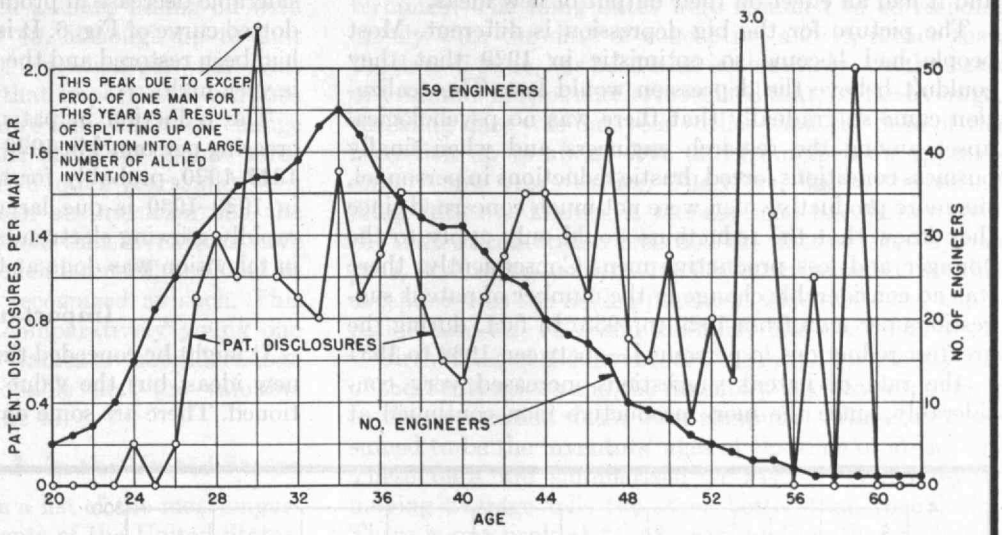


Fig. 3 — For 59 members of a non-electrical research laboratory, the age distribution and the average number of patent disclosures each year are given by the heavy and light lines, respectively.

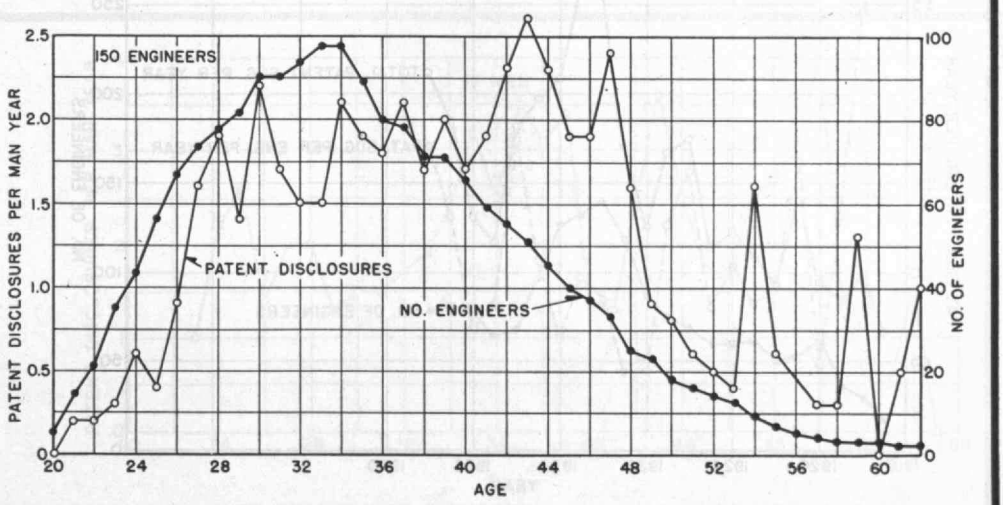


Fig. 4 — A composite study of the data given in Figs. 1, 2, and 3 for 150 engineers making patent disclosures. Since a larger number of persons is involved, the data given here are regarded as more typical than that given in previous figures.

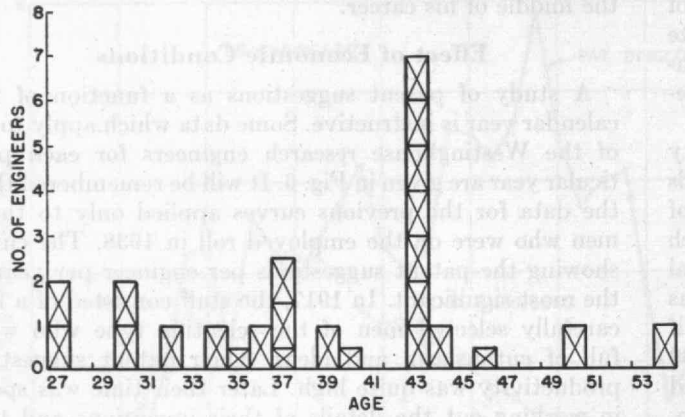


Fig. 5 — Age for maximum inventive productivity, determined from a survey of 22 prolific inventors. Although the sample is a small one, there are indications that the peak of inventiveness is reached by mature men with considerable experience.

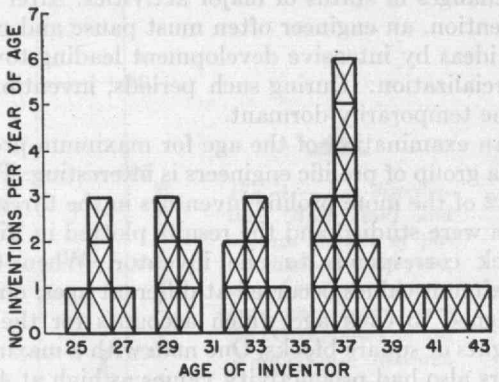


Fig. 7 — Age distribution of engineers of the Westinghouse Research Laboratories making important patent disclosures. The age is that at which the major invention was conceived.

there was a moderate depression, and, as a consequence, a few of the less promising research men were released, as shown by the curve marked "No. of Engineers." This was the first depression experienced by this group of men and it had an effect on their output of new ideas.

The picture for the big depression is different. Most people had become so optimistic in 1929 that they couldn't believe the depression would last. The realization came so gradually that there was no psychological upset among the research engineers and when finally business conditions forced drastic reductions in personnel, the more productive men were not much concerned since they knew that the reductions would only apply to the younger and less productive men. Consequently, there was no considerable change in the number of patent suggestions per man from 1929 to 1933. In fact, during the greatest reductions in personnel — between 1932 to 1934 — the rate of patent suggestions increased very considerably, since the more productive men continued at about normal rate. In general, the decrease in total number of patent suggestions approximately paralleled the decrease in personnel. In 1935 and 1936, however, there was a feeling of pessimism which was reflected in a considerable decrease in productive output, as shown by the dotted curve of Fig. 6. It is evident that in 1938 optimism had been restored and the rate of production of new ideas is very high.

The reduction in patent suggestion with rapidly increasing personnel in 1926–1928 parallels the reduction in 1917–1920, probably for the same reasons. The upswing in 1929–1930 is due largely to an active group in the rapidly growing electronic field; much fundamental work in television was done at this time.

Important Inventions

It might be conceded that the older men still had many new ideas, but the value of these ideas might be questioned. There are some data available on this also. A list

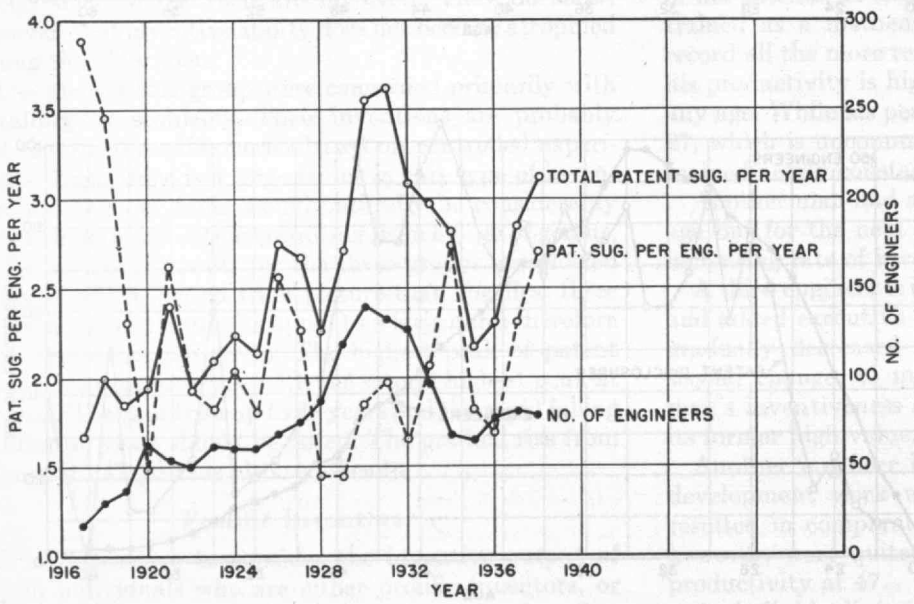


Fig. 6 — A study of patent suggestions as a function of calendar year illustrates the effect of general economic conditions. Observe that the curve of patent suggestions per inventor rose during the depression although the total number of disclosures and the total number of engineers fell during the same period

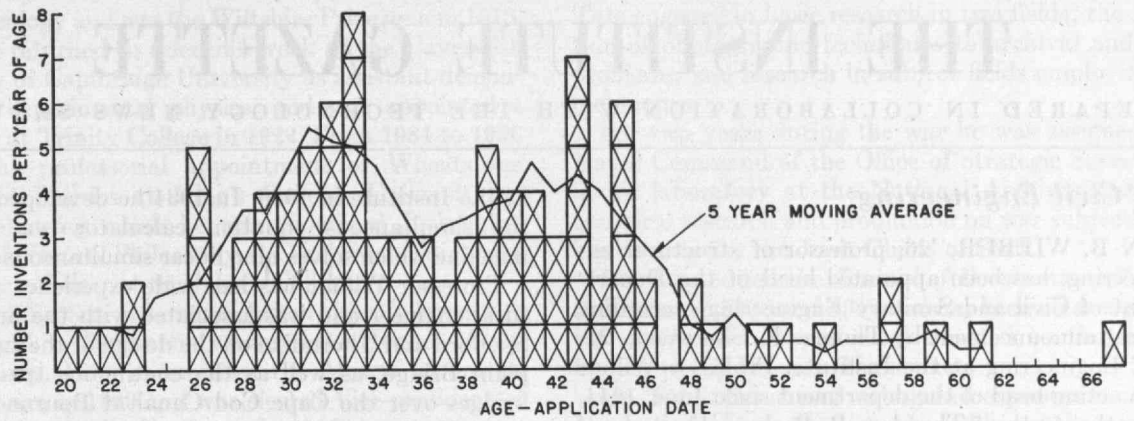


Fig. 8 — Age of inventor at time of filing patents, for 100 men making outstanding inventions in the United States. Each block represents one inventor's age at the time of invention. The line representing the five-year moving average is more informative than the block diagram. Data for this study cover a relatively long period, including that for which technology was not so highly specialized and well organized as it is at present.

of what we believe to be the more important inventions coming from engineers of the Westinghouse Laboratories was compiled, together with the date of conception. The age of the inventor was then determined and the results of this study are plotted in Fig. 7. The peak productivity occurred at 37. There was then a sharp falling off with no important inventions after 43, although up to that point there was one important invention per year. This data probably does not mean that important inventions stopped at this point. The curve will doubtless change shape and be extended into the older age groups some years from now. It takes from five to ten years, and often more, between the conception of an invention and the return of dividends. It is probable that inventions have been made by the older men which later will be found to be valuable, but are not yet recognized as such. This particular group of men is a comparatively young one and the picture which Fig. 7 indicates should change with time. It is highly improbable that the valuable inventions will cut off sharply at 43.

Outstanding Inventions Made in the United States

The *World Almanac* presents a list of the most important inventions made by residents of the United States. An analysis of this list is most instructive. The latest patent issue date given is 1939. One may easily disagree with the choice of some of the inventions, but the list is probably the best available, and for statistical purposes is quite satisfactory. Wherever possible the age of each inventor at the time of making the invention was determined. The filing dates were assumed to correspond closely with the date of conception and it, rather than the date of issue, has been used in this study. On the basis of a number of spot checks it seemed that, on the average, the filing date was one year earlier than the date of the invention up to about 1905 and from then on approximately two years earlier. Therefore, unless the actual filing date was known, it was assumed that before 1905 the date of conception preceded the date of issue by one year, and subsequent to 1905 by two years. A notable exception was the Selden patent in which case the application date was 1879 and the issue date was 1895.

Birth dates of the inventors were found for exactly 100 of these inventions and the inventors' ages corresponding to the application dates were computed. These were assumed to be the inventors' ages at the time of invention. These data are summarized in Fig. 8. The five-year moving average tells the story better than the blocks. There is one peak at 31–33 years and another nearly as high at 41–43 years. More than (*Continued on page 52*)

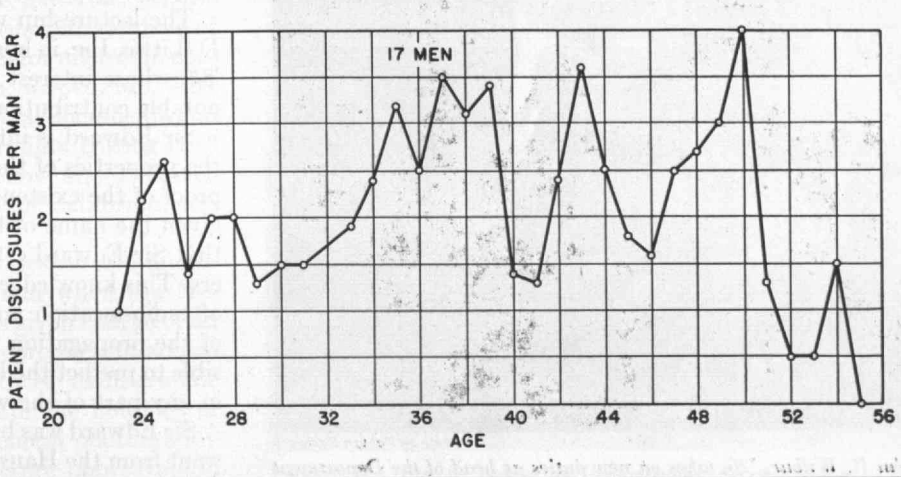


Fig. 9 — Patent disclosures made by 17 Westinghouse department managers and section heads. This study illustrates that the inventiveness of executive engineers is maintained throughout middle life.

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Heads Civil Engineering

JOHN B. WILBUR, '26, professor of structural engineering, has been appointed head of the Department of Civil and Sanitary Engineering, according to a recent announcement by Thomas K. Sherwood, '24, Dean of Engineering at the Institute. Professor Wilbur has been acting head of the department since June, 1944, following the death of Theodore B. Parker, '11, its head at that time.

A native of Oakland, Maine, Professor Wilbur was educated at the Academy High School in Erie, Penn., and the Institute, from which he was graduated in 1926. He was awarded the degree of master of science in 1928 and his doctorate in 1933. Professor Wilbur served as an assistant in his department from 1926 to 1928 when he joined the engineering staff of the Maine Central Railroad Company. From 1929 to 1930 he was a bridge designer for the New York Central Railroad Company in New York. In 1930 Professor Wilbur returned to the Institute as an instructor in civil engineering and was promoted to the rank of assistant professor in 1934. He was appointed an associate professor in 1937 and professor of structural engineering in 1943.

Professor Wilbur was responsible for the development of the structural analysis laboratory which was established at the Institute in 1936. In 1934 he developed and built the simultaneous equation calculator — a computing machine which solves nine linear simultaneous equations.

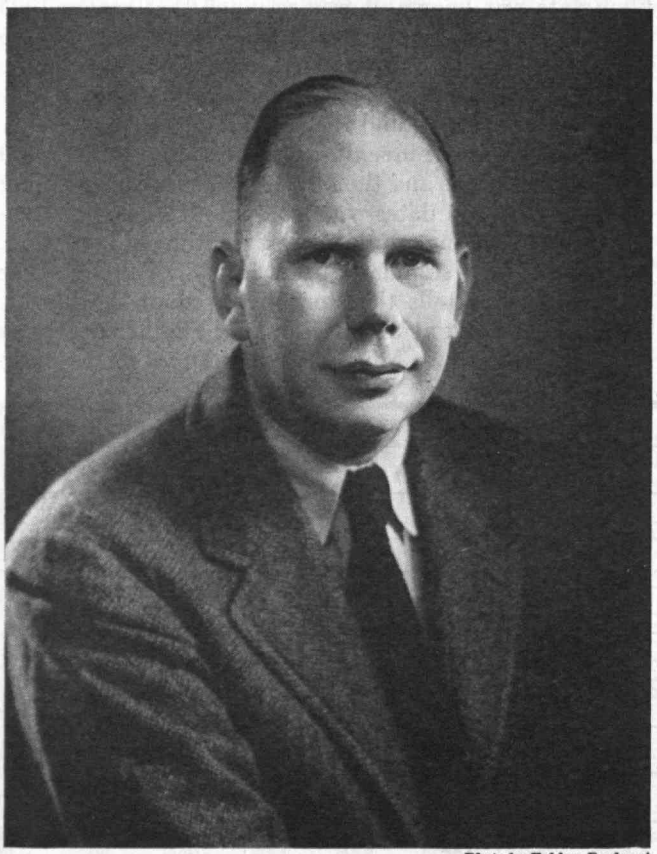


Photo by Fabian Bachrach

John B. Wilbur, '26, takes on new duties as head of the Department of Civil and Sanitary Engineering.

Professor Wilbur has had wide experience as a structural engineer and was associated with the firm of Fay, Spofford and Thorndike on the design of the Lake Champlain Bridge, as well as the continuous truss highway bridges over the Cape Cod Canal at Bourne and Sagamore. He has done important consulting work for various engineering and insurance companies. From 1940 to 1945 he was chief engineer for the Smith-Putnam Wind Turbine project in Vermont for the S. Morgan Smith Company.

During the war he was a consultant to the National Defense Research Committee and was in charge of an investigation dealing with the constructural design of fortifications conducted at the Institute for the Office of Scientific Research and Development.

Professor Wilbur is a member of the American Society of Civil Engineers and of the Boston Society of Civil Engineers, and has twice received the designers section award of that society. In 1943 the society presented him with the Desmond Fitzgerald award. He is also a fellow of the American Academy of Arts and Sciences, a member of the American Society for Engineering Education, Sigma XI, and an honorary member of Chi Epsilon, the honorary civil engineering fraternity.

He is the author of many technical papers and bulletins, and with Professor Walter M. Fife, of a textbook, *Theory of Statically Indeterminate Structures.*

In 1926 Professor Wilbur married Miss Lillian E. Kelley of Oakland, Maine. They have one son.

Arthur Dehon Little Memorial Lecture

SIR EDWARD V. APPLETON, distinguished English physicist and Secretary of the British Department of Scientific and Industrial Research, will deliver the first annual Arthur Dehon Little Memorial Lecture at the Institute on November 19. Sir Edward has chosen for his subject: "Science, Government, and Industry."

The lectureship was established by the firm of Arthur D. Little, Inc. in honor of the memory of Arthur D. Little, '85, whose interest in research for industry led to many notable contributions.

Sir Edward is internationally known for his studies of the properties of the upper atmosphere which resulted in proof of the existence of ionized layers, one of which was given the name of the "Appleton layer." It was in 1925 that Sir Edward established the existence of ionized layers. This knowledge led to developments in the technique of radio-location and an understanding of the principles of the propagation of radio waves that has made it possible to predict the best frequencies for radio transmission in any part of the world at a given time.

Sir Edward was born in Bradford, England, in 1892 and went from the Hanson School to St. John's College, Cambridge. He took parts I and II of the Natural Science

Tripos in Physics in 1913 and 1914, a period in which he also read geology and was the Wiltshire Prize man in 1913. In 1920 he returned to scientific work at the Cavendish Laboratory of Cambridge University as assistant demonstrator in experimental physics, and was appointed a sub-elector at Trinity College in 1922. From 1934 to 1936 he held the professorial appointment of Wheatstone Professor of Physics at King's College, University of London, following which he was appointed Jacksonian Professor of Natural Philosophy at Cambridge University and became a fellow at St. John's College.

The Royal Society of London elected him a fellow at the age of 35, and in 1933 he was awarded the Hughes Medal of the Society. He was awarded the Morris Liebmann memorial prize in 1929 and was elected Vice-president of the Institute of Radio Engineers in 1932.

In his post as Secretary of the Department of Scientific and Industrial Research, Sir Edward directs research in all branches of natural science and their application to industry except in the fields of medicine and agriculture, which are handled by separate departments. The divisions of his department include research in building, forest products, fuel, roads, water pollution, and geological surveys.

Librarian Designee

VERNON D. TATE, Director of Photography, in charge of the Photographic Records Office of the National Archives, has been appointed librarian designee at the Institute according to John E. Burchard, '23, Director of Libraries. He will assume his duties at the Institute on January 1, and will become librarian on July 1, 1947, upon the retirement of William N. Seaver who has served as Institute librarian since 1925.

Born in Mt. Carmel, Ill., on January 3, 1909, Mr. Tate spent most of his boyhood in Arkansas, Washington, and California. Undergraduate work was begun at the University of California in Los Angeles in 1925, and graduate work on Pacific Coast maritime history was begun at the same institution in 1929. In the spring of 1930, Mr. Tate was awarded the Native Sons of the Golden West traveling fellowship in Pacific Coast history. The next two years were spent in research at the Archivo General de Nacion, and in the archives and libraries of the several educational institutions of Mexico City, Guadalajara, Tepic, Puebla, and Oaxaca. During this period, Mr. Tate was engaged by the Library of Congress to reproduce materials for the history of the United States in the principal archives of Mexico, and developed early techniques for microfilm documentation. As a result of his work in Mexico, Mr. Tate accumulated some 75,000 pages of original documentation in the then new and novel form of microfilm. During 1933 and 1934 Mr. Tate was Teaching Fellow and Research Fellow, respectively, at the University of California, and received his doctorate in 1934.

In 1934 Dr. Tate spent the year in research and microphotography in Washington, D. C., and when the National Archives neared completion, was given charge of all of the duplicating and photographic reproduction activities of the agency. He established three photographic laboratories to preserve and perpetuate the holdings of the National Archives. One was for general photography and still work, another for motion picture photography, and the third for sound studio and sound records of all types. In directing the activities of these laboratories, Dr. Tate engaged in basic research in two fields; the application of photographic techniques to archival and library problems, and research in subject fields employing these techniques.

For two years during the war he was assigned to the Naval Command of the Office of Strategic Services, and in his laboratory at the National Archives engaged in technical research and production on war subjects, working directly for the Joint Chiefs of Staff.

Dr. Tate edited the *Journal of Documentary Reproduction* between 1938 and 1942 and has been an associate editor of *Neptune*, a periodical devoted to the maritime history of the Western Hemisphere.

Dr. Tate's broad and widespread experience in modern library techniques fits him admirably for the position of librarian of the Charles Hayden Memorial Library, where, as recorded on page 25, every effort will be made to advance true scholarship and culture by the most effective means available.

Fantastic Figures

AT the last gathering of the season, 92 members and guests attended the 251st meeting of the Alumni Council held, as usual, in Pritchett Hall, Walker Memorial, on May 27, with A. Warren Norton, '21, presiding.

First order of business called for introduction of newly elected officers of the Alumni Association, and new members of the Alumni Council. President Norton announced that newly elected officers to serve for one year are Alfred P. Sloan, Jr., '95, Honorary President, and Harold Bugbee, '20, President, and, for a two-year period, George

Vernon D. Tate, in charge of Photographic Records Office of the National Archives, will become librarian.

C. Dandrow, '22, Vice-president. Elected to serve as members of the Executive Committee for a two-year period are Larcom Randall, '21, and Avery A. Ashdown, '24.

Results of Alumni voting gave elections to the following: Term members of the Corporation for five years, A. Warren Norton, '21, Frederick S. Blackall, Jr., '22, Albert J. Browning, '22; members of the National Nominating Committee for District 1, Robert S. Williams, '02; District 2, Robert C. Erb, '17; District 4, Ralph C. Robinson, '01; District 5, Gordon G. Holbrook, '10. Class representatives elected are: C. Frank Allen, '72; George W. Kittredge, '77; Charles E. Fuller, '92; John P. Ilsey, '97; Frederick H. Hunter, '02; George A. Crane, '07; John M. Pettingell, '12; H. E. Lobdell, '17; C. Yardley Chittick, '22; Dwight C. Arnold, '27; Thomas E. Sears, Jr., '32; Philip H. Peters, '37; and Warren S. Loud, '42.

Speaker of the evening was Horace S. Ford, who gave an illustrated talk on expansion of M.I.T. activities since the Institute moved to its present Charles River site. Operating income of the Institute, exclusive of war research was $750,000 in 1916, $2,800,000 in 1926, $3,700,000 in 1940, $4,400,000 in 1945, and it is estimated to be $5,000,000 for 1946. When war income is included these figures become fantastic; total income was $6,000,000 in 1940, $12,000,000 in 1942, $20,000,000 in 1943, $25,000,000 in 1944, $40,000,000 in 1945, and $25,000,000 in 1946, with an estimate of $10,000,000 for 1947. The growth of staff has been from 600 in 1940 to 700 in 1946, but non-staff personnel increased from 800 in 1940 to a peak of 6,067 in 1945 and the estimate for next year is 2700. In 1916 there were six administrative officers. Today there are 50 administrative officers and there is distributed among them much more than 10 times the amount of work there was to be done in 1916.

Present and anticipated changes in plant were also discussed. Since the war, the Institute has acquired a permanent building for chemical engineering, originally built for Chemical Warfare Service, and one of the permanent Radiation Laboratory buildings. A temporary war research building will be used as barracks to accommodate 600 unmarried students. Westgate village is now housing 100 married couples, and plans are underway for additional quarters to house 200 more families.

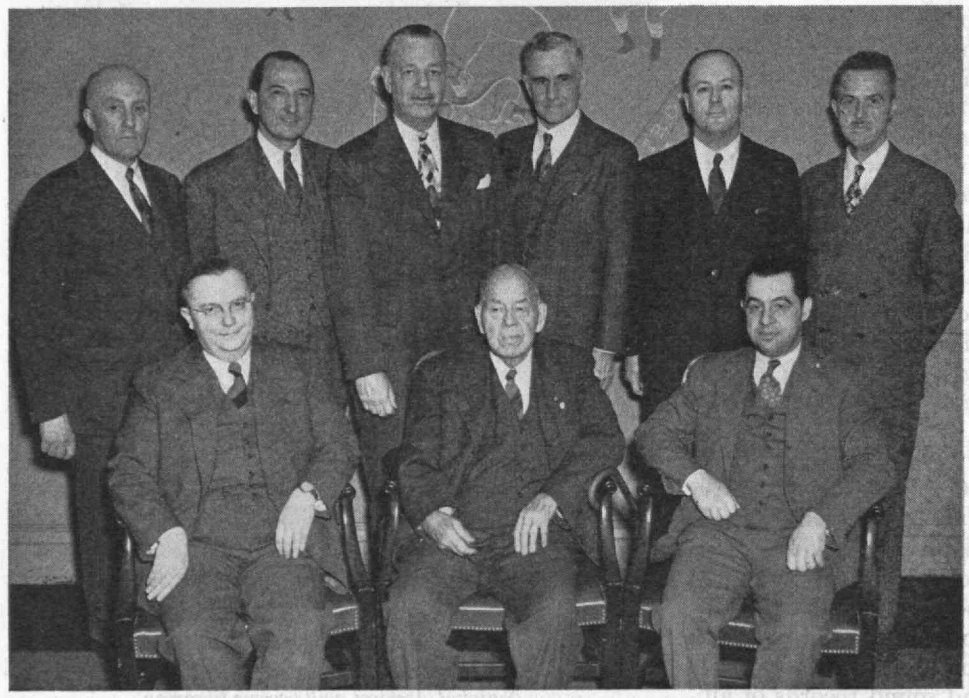
Increased Investment

AN increase of one hundred dollars per academic year in tuition at M.I.T. has been announced by President Karl T. Compton, this increase to take effect with the opening of the summer term in 1947. The increase will bring the Institute's tuition to seven hundred dollars an academic year. In making this announcement, Dr. Compton said:

Since 1939–1940, the Institute's operating expenses have risen 28 per cent and are still rising. The increase in tuition amounts to approximately 16 per cent and thus goes only part way in meeting higher costs. A recent survey of college fees indicated that increases are being made throughout the country and that the average of reported increases has been 19 per cent. Although the Institute's expenses, particularly for technical equipment and extensive laboratory operations in the various professional fields, are higher per student than are those at many other institutions, its comprehensive tuition fee includes all the charges usually imposed as extra undergraduate fees, such as athletic, medical, matriculation, and diploma fees.

Except for alloting increased funds to scholarships, we shall apply the additional income received mainly to salaries and wages. While substantial increases in compensation have already been put into effect at the Institute, we believe that further increases must be made if our personnel are to be adequately protected against the rise in the cost of living and if we are to be able to secure and hold outstanding teachers. Even with the increase in tuition, the student will be paying only about half the cost of his education, the rest being met by income on endowment.

In recent years we have received many additions by gift and bequest to our scholarship funds, and these funds, supplemented by allotment from the increased fees and by the Technology Loan Fund, will be ample to meet any increased needs for student aid resulting from the higher tuition. The Institute has a student loan fund totaling (*Continued on page 46*)



A group of Honorary Secretaries in Chicago at a recent meeting on scholarship. In usual reading order are: (seated) H. E. Lobdell, '17, Dean of Students, Lonsdale Green, '87, T. P. Pitré, Associate Dean of Students; (standing) Ralph Sargent, '18, William Steinwedell, '25, Sherry O'Brien, '17, Louis H. G. Bouscaren, '04, Robert W. Van Kirk, '18, and Edmund G. Farrand, '21. Unavoidably absent were Donald B. Gilman, '32, and Arthur B. Brand, '26.

Photo by Oscar and Associates

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THROUGHOUT industrial history, copper and its alloys have speeded the march of progress by making new or improved products easier to manufacture and easier to sell. Because these metals are strong, durable, corrosion-resistant, highly workable, and excellent in finished appearance, they are favored by design engineers, production men, and sales organizations alike.

These and other copper-base alloys, as produced by Revere today, offer users higher quality and greater uniformity than ever before. 145 years' experience with metals enables Revere to provide you with superior mill products which include: *Copper and Copper Alloys:* Sheet and Plates, Roll and Strip, Rod and Bar, Tube and Pipe, Extruded Shapes, Forgings — *Aluminum Alloys:* Tube, Extruded Shapes, Forgings — *Magnesium Alloys:* Sheet and Plate, Rod and Bar, Tube, Extruded Shapes, Forgings— *Steel:* Electric Welded Steel Tube.

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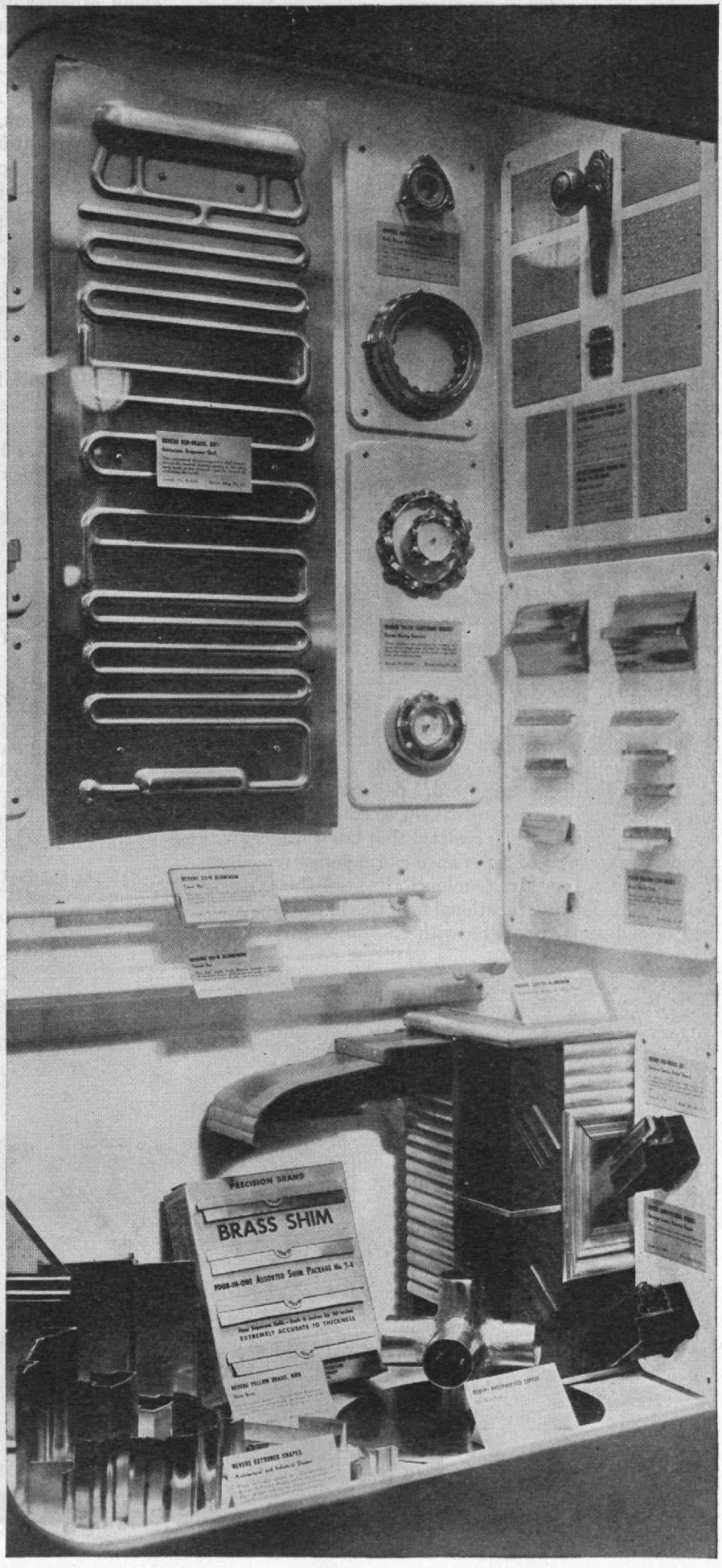


THE INSTITUTE GAZETTE

(*Continued from page 44*)

$1,800,000 which has now been in operation since 1930 and from which loans are made at a two per cent interest. At no time has the demand on this loan fund exceeded $900,000 so that here again we have an ample margin to insure that students who are scholastically qualified can obtain adequate assistance.

In his announcement President Compton spoke also of the Administration's determination to adhere to the ideal of continually maintaining Technology as one of the institutions in a position of independent leadership in science, engineering and architecture. He emphasized the importance of this ideal in view of trends whereby the financial burden of higher education seems destined to be more and more assumed by governmental agencies. Dr. Compton stated:

> It is becoming increasingly important that a certain number of private and independent educational institutions should maintain positions of unquestioned leadership and thus set standards of achievement and freedom for all higher education.

Industrial Relations Appointee

JOSEPH N. SCANLON, Director of Research and Engineering of the United Steelworkers of America, C.I.O., and widely known for his contributions to the improvement of labor-management relations, has been appointed a lecturer in the Department of Economics and Social Science at the Institute, James R. Killian, Jr., '26, Vice-president, announced recently.

"It has often been suggested," said Dr. Killian, "that educational institutions must help to educate labor leaders. It has less often been realized that labor leaders with a wide background of experience can be effective educators. In appointing Mr. Scanlon to its staff the Institute seeks to broaden its educational facilities in the important field of industrial relations with the object of bringing about a better understanding of the problems of union-management relations."

Mr. Scanlon, a native of Cleveland, Ohio, has been actively associated with the labor movement since 1935, as a member of the Amalgamated Association of Iron, Steel and Tin Workers, which was later merged with the Steelworkers Organizing Committee. Mr. Scanlon began his career as a cost accountant and, after considerable experience with fabricating companies and a well-known firm of cost accountants, he took a position in the basic steel industry. After several years' experience with cost accounting he went to work in the production department of the steel industry where he served as a supervisor, production and maintenance worker in almost every department of steel operations.

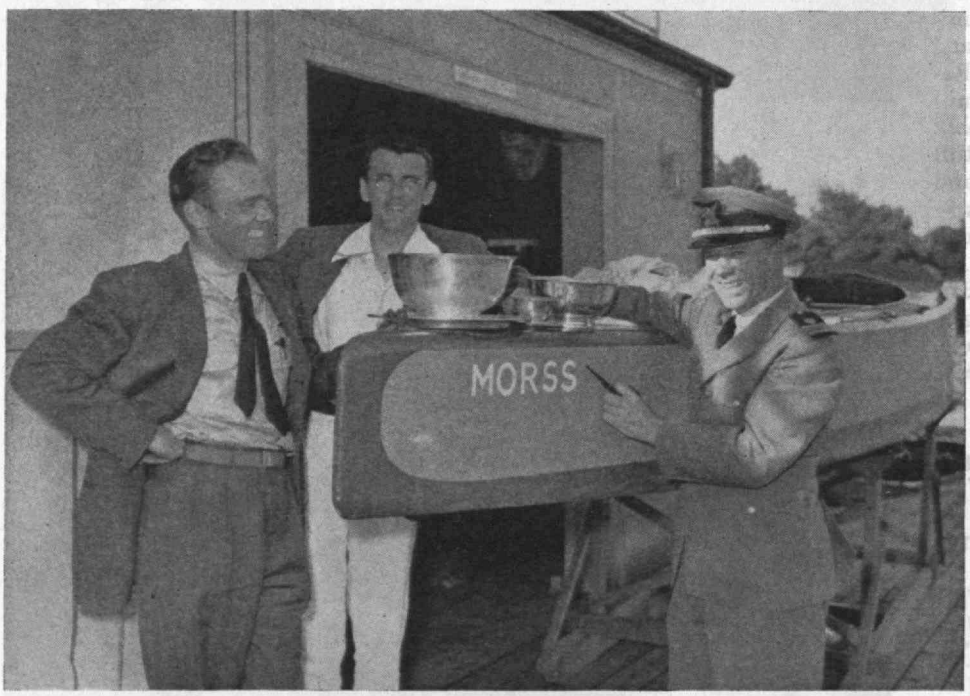
He joined the staff of the United Steelworkers of America in 1940, and devoted most of his time to the development of union-management co-operation plans with many firms. He was a member of several labor advisory committees of the War Production Board during the war and is now a labor member of the National Steel Commission.

Mr. Scanlon is widely known as a speaker and has frequently addressed meetings of employers, trade associations, and engineering societies on problems of labor relations. He has also lectured and participated in industrial relations seminars and conferences at Harvard, Princeton, the Universities of Pennsylvania and Chicago, and Holy Cross College, as well as at the Institute.

Metallurgy Report

A MEETING of the Visiting Committee on the Department of Metallurgy * was held in Cambridge on October 9, 1945. The Committee first visited the various laboratories of the Department headquarters and listened to statements from key men on (*Continued on page 48*)

* Members of this Committee for 1945–1946 were Louis S. Cates, '02, Chairman, Archer E. Wheeler, '95, Harold B. Harvey, '05, Flemmon P. Hall, '21, Carl M. Loeb, Jr., '28, Galen H. Clevenger, and Willard H. Dow.



Roger Willcox, '42, skipper, John F. Fennessey, 2–44, crew, and Walter C. Wood, '17, recently returned to the Institute as sailing master, with national 110-class championship trophies won at Larchmont, N. Y. on August 16. Fleets from Marblehead, Detroit, Chicago, and New York were represented at the regatta, which marks the first time the Technology club has contended and taken honors outside the intercollegiate class.

THE INSTITUTE GAZETTE

(*Continued from page 46*)

the staff who outlined the present situation in their own divisions and suggested future needs. The men interviewed were Professors John Chipman, Morris Cohen, '33, Antoine M. Gaudin, Victor O. Homerberg, '21, Frederick H. Norton, '18, John T. Norton, '18, and John Wulff.

At the conclusion of these interviews the Committee adjourned for lunch with James R. Killian, Jr., '26, and Robert M. Kimball, '33, of the Administration; and Professor Robert S. Williams, '02, and Carl F. Floe, '35, of the Department. An active but informal discussion of Department problems followed. General agreement was reached on the following points:

The equipment of many laboratories needs to be modernized and rearranged for more efficient use of space. In some cases additional equipment for routine instruction is required as well as space to handle large classes properly. The cost of this modernization, rearrangement, and re-equipping of all laboratories was estimated by the staff to require about $250,000.

The Committee recognized the need for the development of instruction, and especially of research, in mechanical metallurgy (forging, rolling, pressing, wiredrawing, and so on) for which no facilities are now available in the Department. It was the unanimous feeling that a new building and extensive equipment for this purpose were not justified, for two reasons: (a) the great difficulty of collecting the large capital sum necessary for this addition to the Department; and (b) the great cost of operation and maintenance if large-scale equipment were to be installed. It was felt that the Administration should make every effort to effect a satisfactory working arrangement with the Department of Mechanical Engineering, in which much of the equipment needed is now available or its purchase is contemplated. It was the unanimous feeling that duplication of expensive equipment in all divisions should be avoided if at all possible.

It was recommended that a staff member be added to specialize in the field of the corrosion of metals.

Methods of obtaining industrial fellowships or grants-in-aid in order to increase the amount of research in the Department were discussed but were left for consideration at a later meeting of the Committee.

The re-establishment of work in electrochemistry and electrometallurgy was considered at some length. It was the general agreement that adequate training in electrometallurgy must be given but no decision was reached as to whether this should be treated as an independent subject or included in the general work in production metallurgy.

Survey of Electrical Curriculum

FOR the Department of Electrical Engineering a meeting of the Visiting Committee* was held in Boston on January 21, 1946. Each year, the Committee has been furnished a review of the Department's activities and the problems which it is facing. The report this year was particularly helpful, and the Committee appreciated the time and effort given by the Department in so clearly presenting the facts.

The morning was spent in a visit to the laboratories, particularly the Laboratory for Insulation Research, the Center of Analysis, the Servomechanisms Laboratory, the Research Laboratory of Electronics, the Stroboscopic Photography Laboratory, and the High-Voltage Research Laboratory. The breadth, scope, and character of the work undertaken in these various fields impressed the Committee. The results obtained not only made tremendous contributions to the war effort but, in addition, opened up new fields which promise much for the future in peacetime. Important as these things are, the Committee was impressed with the character, intelligence, imagination, and ability of the men in charge of these groups, under whose influence and direction the graduate and undergraduate will be trained.

The Department's present enrollment makes it the largest Department at the Institute, and, by reason of the interest in electronics and communication emphasized by the war, it has a high percentage of new enrollment. This presents a substantial problem for the staff, which will require additions (particularly of instructors, research associates, and assistants) in order to care for the emergency student registration of veterans, to reinstate some part of the educational development and provide time for creative activity on the part of the staff, and to man the greatly augmented research activities of the Department.

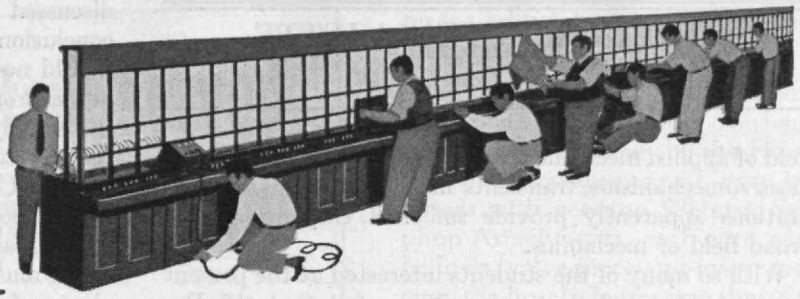
The discussion in the afternoon was directed largely to the educational program, particularly in the power field. The need for additional space for the considerably expanded Department was also discussed.

The Committee gave considerable time to a discussion of the desirability of thorough grounding in the broad fundamentals as contrasted with narrower instruction in specialized branches of electrical engineering work. The Committee was unanimous in feeling that, while certain courses in specialized knowledge are necessary, the greatest emphasis should be placed on the broader, rather than the narrower, specialized training. Without attempting to outline the various arguments which were advanced, it was generally agreed that the importance of servomechanisms should be stressed because of the broad overall mental development which such study embraces.

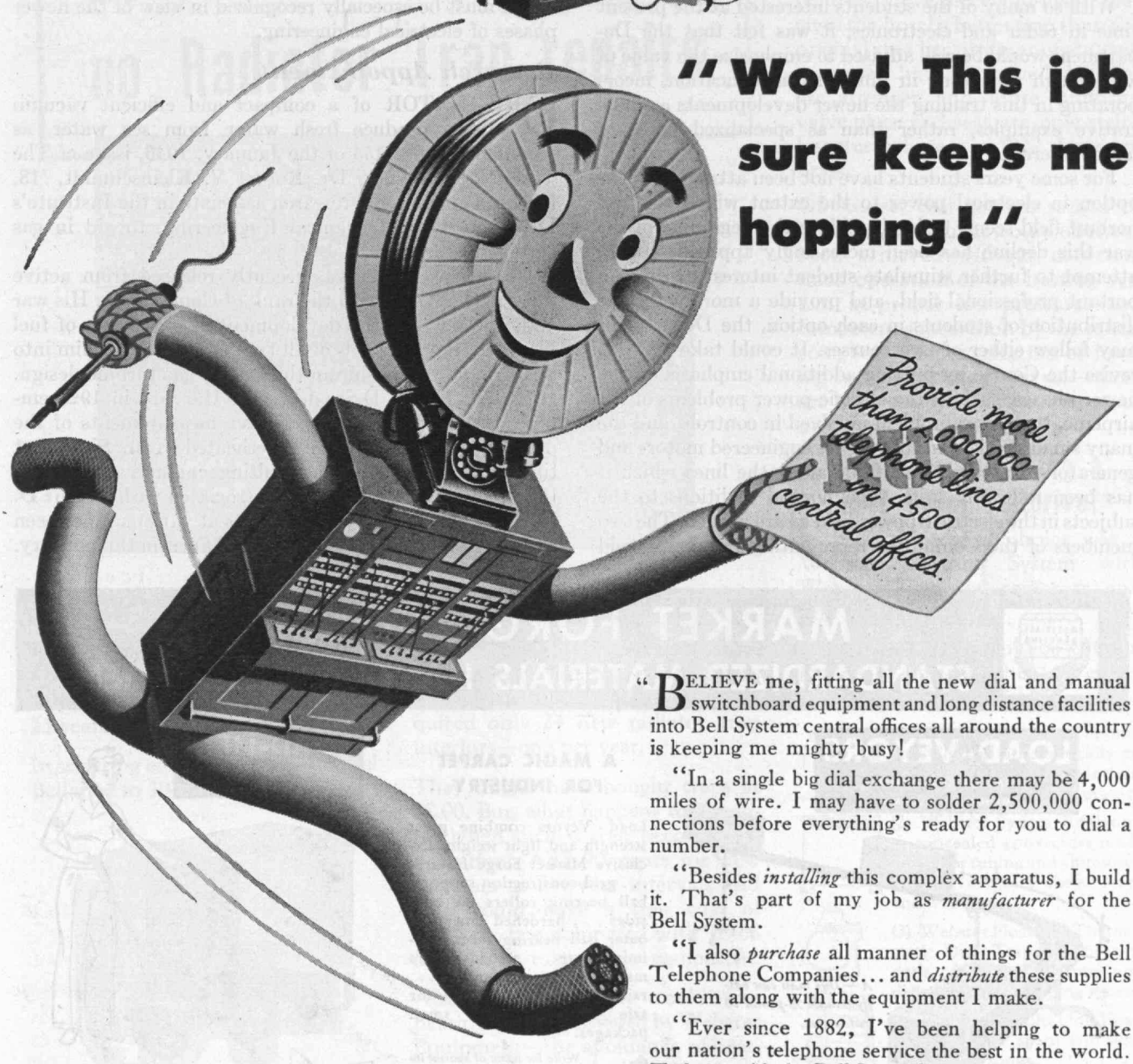
The Department has insisted that thermodynamics be included in all course options, with student choice allowed as to whether the mechanical engineering, chemical engineering, or physics approach be selected. In the field of mechanics, no substitutions have been allowed, since past experience has shown that students (particularly for those transferring to the Institute) have been weak in these subjects. In two of the three options in the Electrical Engineering Course, some form of fluid mechanics is required.

The Course, therefore, requires a degree of study in mechanics, which in the opinion of the Committee, is essential. It was not considered necessary to include a larger number of mechanical engineering subjects but the Committee felt that more emphasis, and possibly more time, might be given to these subjects in the undergraduate years — that added emphasis might well be placed on more instruction in the broad (*Concluded on page 50*)

* Members of the Committee for 1945–1946 were: Francis J. Chesterman, '05, Chairman, Harold B. Harvey, '05, Philip H. Chase, '09, Reginald L. Jones, '09, Robert E. Doherty, F. C. Lindvall, and Harry C. Wiess. Also present were Edward L. Moreland, '07, Executive Vice-president, Carlton E. Tucker, '18, and Harold L. Hazen, '24, of the Department, and Arthur H. Kehoe.



"Wow! This job sure keeps me hopping!"



"BELIEVE me, fitting all the new dial and manual switchboard equipment and long distance facilities into Bell System central offices all around the country is keeping me mighty busy!

"In a single big dial exchange there may be 4,000 miles of wire. I may have to solder 2,500,000 connections before everything's ready for you to dial a number.

"Besides *installing* this complex apparatus, I build it. That's part of my job as *manufacturer* for the Bell System.

"I also *purchase* all manner of things for the Bell Telephone Companies... and *distribute* these supplies to them along with the equipment I make.

"Ever since 1882, I've been helping to make our nation's telephone service the best in the world. Today...with the Bell System's construction program of more than $2,000,000,000 in full swing . . . I'm busier than ever.

"Remember my name... it's Western Electric."

MANUFACTURER... of 43,000 varieties of telephone apparatus.

PURCHASER... of supplies of all kinds for telephone companies.

DISTRIBUTOR... of telephone apparatus and supplies.

INSTALLER... of telephone central office equipment.

Western Electric

A UNIT OF THE BELL SYSTEM SINCE 1882

THE INSTITUTE GAZETTE

(*Concluded from page 48*)

field of applied mechanics. At the graduate level, the work in servomechanisms, transients in linear systems, and vibrations apparently provide sufficient emphasis in the broad field of mechanics.

With so many of the students interested at the present time in radar and electronics, it was felt that the Department would be well advised to emphasize the value of a thorough grounding in fundamental education, incorporating in this training the newer developments as illustrative examples, rather than as specialized fields of major interest.

For some years students have not been attracted to the option in electrical power to the extent which this important field seems to justify. Since the beginning of the war this decline has been increasingly apparent. In an attempt to further stimulate student interest in this important professional field, and provide a more equitable distribution of students in each option, the Department may follow either of two courses. It could take steps to revise the Course by putting additional emphasis on the newer phases, such as the electric-power problems of the airplane, the power problem involved in controls, and the many small special-purpose highly engineered motors and generators, or it could continue along the lines which it has been following, with such normal additions to the subjects in the electrical power field as are needed. The two members of the Committee representing the power field discussed the various problems at some length, and the conclusion of the Committee was that the Department should not attempt to change the scope of the electric-power program by a complete revision of the Course or by the employment of a leader in that professional field. Although student interest in the power option is diminishing, the Committee believes the staff should include one or two men who are strong in the field of electric power.

Adequate space is an ever-present problem and one which must be especially recognized in view of the newer phases of electrical engineering.

Research Appointment

ORIGINATOR of a compact and efficient vacuum still to produce fresh water from sea water, as recorded on page 155 of the January, 1946, issue of The Technology Review, Dr. Robert V. Kleinschmidt, '18, has been appointed a research associate in the Institute's Department of Mechanical Engineering, to aid in gas turbine research.

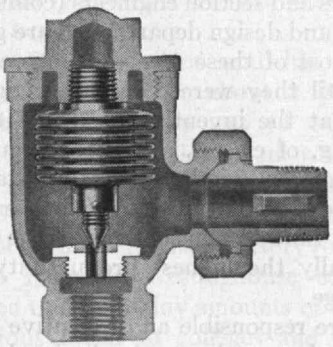
Dr. Kleinschmidt was recently released from active duty in the Navy with the rank of Commodore. His war activities covered the development of new types of fuel plants for naval vessels of all types and brought him into a position of leadership in the field of gas turbine design. His thesis for his D.Sc. degree at Harvard in 1923 embraced some of the first extensive measurements of the properties of high-pressure superheated steam. Since that time he has served as consulting engineer in applied thermodynamics. He has been associated with Arthur D. Little, Inc. for many years and has at various times been associated with important industrial firms in this country.

This Webster System served 23 years with practically no Radiator Trap repairs

HOTEL BELLERIVE, KANSAS CITY, MO.
Built in 1922. Architect, Preston J. Bradshaw, St. Louis.
Owner, Barney Goodman. Operated by Beacon Rental Co.

This is the story of 605 radiator traps — and how they served for 23 years with practically no repairs.

In selecting equipment for the Hotel Bellerive in 1922, Architect Preston J. Bradshaw, of St. Louis, sought long life and low maintenance cost. He specified Webster Sylphon Traps for which the contractor paid $3.68 each.



WEBSTER SYLPHON TRAP
Originally installed in Hotel Bellerive. Darker portion shows replacement made after 23 years service.

For 23 years, heating comfort was unimpaired and this building required only 24 new radiator trap interiors—one per year.

They might have bought traps at $2.00. But, what happens to economy when such a trap becomes inoperative? Add 90 cents for new interiors at five-year intervals and you would have a trap cost of $5.60 to date compared with $3.68 for the best available equipment.

Also important is the trouble-free heating service provided by Webster Equipment—the avoidance of heating complaints which might have meant added indirect cost — even loss of rental income.

FRED N. SCHAAD
Webster Representative in Kansas City. Schaad moved to Kansas City from Columbus about a year ago after having been a Webster Sales and Service Representative in the Ohio capital for 18 years. He is typical of the men who make possible Webster's service to customers.

During the 1944-45 heating season a complete check-up and overhaul of all traps was begun by the Hotel Bellerive. Replacement of worn interiors with genuine Webster Sylphon Attachments, each with new bellows, valve piece and insert seat gives the hotel a better trap than the original one because manufacturing processes have improved, bellows are stronger and more uniform, valve piece and seat are now stainless steel whereas in 1922 they were brass.

Of course, this service record of Webster Equipment would not have been achieved without conscientious operation of the heating system at proper low pressures and competent supervision by the rental company. Proper selection of heating equipment *and proper use*—these are both essentials of heating economy.

Are You Planning a 194? Hotel Bellerive?

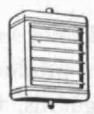
In 1922, the logical choice was a Webster Vacuum System with Webster Traps on radiators and drip points.

Today the choice would be a "Controlled-by-the-Weather" Webster Moderator System with:

(1) Webster Outdoor Thermostat Control automatically assuring the lowest possible pressure consistent with comfort;

(2) Webster System Radiation — concealed convectors made of copper tubing and aluminum fins, with *integral* Webster Traps and Valves;

(3) Webster Float and Thermostatic Drip Traps on heating coils of air conditioners and drip points of the piping system;



(4) Webster-Nesbitt Unit Heaters for garage space and similar heating zones.

Let Webster experience serve you.

AGE OF INVENTION

(*Continued from page 41*)

one-half of the outstanding inventions in this country were made at the age of 36 or more. Thirty-five per cent of the inventions (some of them very outstanding) were made after the inventors had reached 40 years of age. It will be noted that one of these inventions was made when the inventor had reached an age of 67 years. Age 43 appears again as an important peak. In most of the data the beginning of the decline seems to start along here.

Psychological studies and data on the age at which certain inventors conceived their first important ideas have left the impression in the minds of many people that men are most productive of new ideas in their late twenties or early thirties. Such an opinion entirely ignores the effect of gradually increasing knowledge and experience, particularly with reference to those who live in a scientific or technical atmosphere.

No Age Limit for Genius

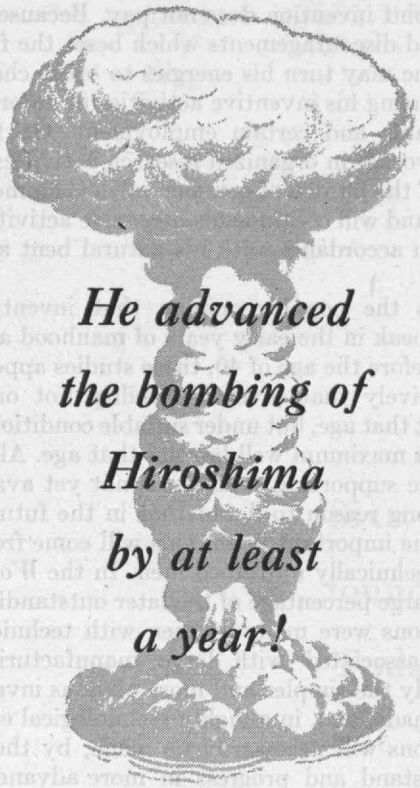
It is believed that these data definitely establish that inventive genius does not cease before 40 years of age but that it continues with great vigor for a number of years longer. For the groups studied, the peak of inventive productivity is reached well after 40, and there is considerable activity even after age 50. The average age of the technical men in the Westinghouse research group was 37 in 1938 and for the other two groups the average was 40 years.

An examination of the data indicates that the period of greatest productivity, as based on the number of patent suggestions, is between 27 and 48 years of age. On the basis of outstanding inventions the greatest productivity is between 26 and 45 years of age. Part of the decrease for the older men is due not to any loss of ingenuity, but results from change in character of their work; many of them get into executive positions and must devote most of their energies to other than strictly technical problems. The results of a study of the patent disclosures made by 17 department managers and section engineers (combined Westinghouse research and design department) are given in Fig. 9. Of course most of these men did not occupy executive positions until they were 35 years of age or more. It is evident that the inventive productivity of these men, representing, of course, a selected group of men with especially vigorous minds, was well sustained until the age of 50, indicating that in spite of their executive duties they found time to consider new ideas with unabated vigor. Actually the highest productivity occurred at 50 years of age.

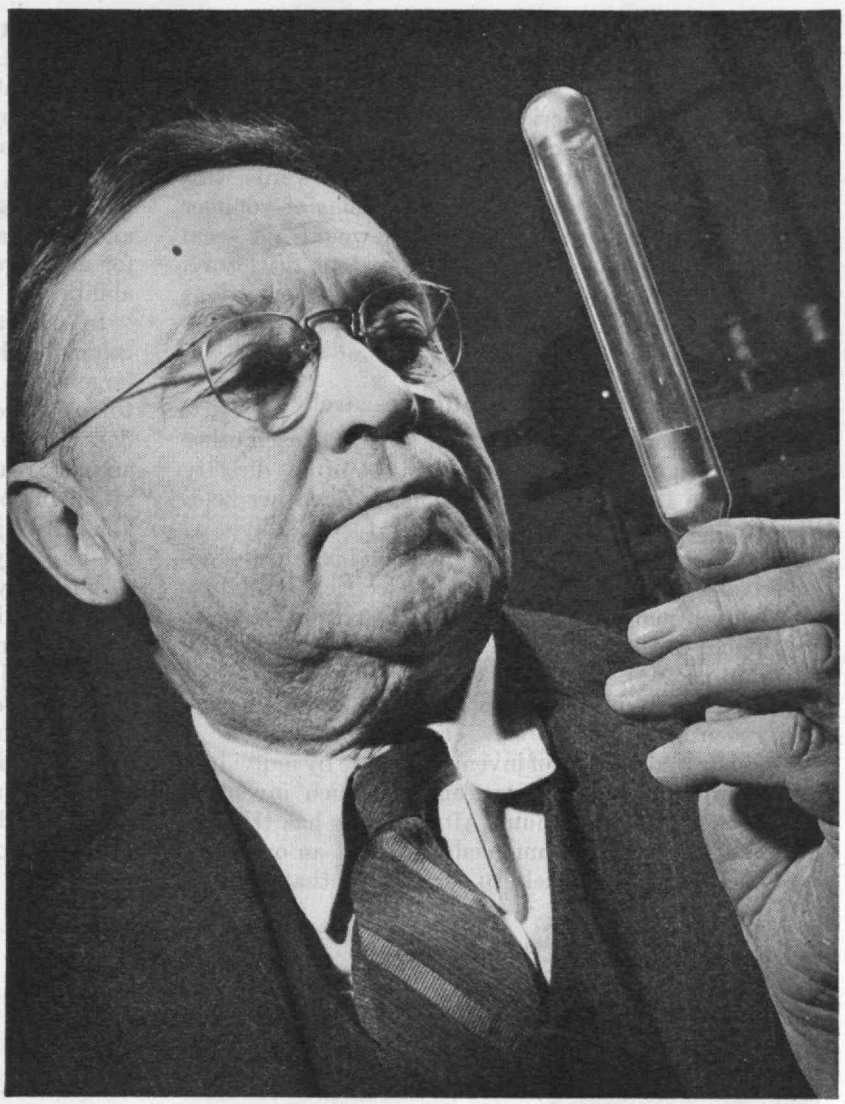
As men get into more responsible and executive positions some of them may become less active in developing new ideas for machines and physical objects, but their inventive genius may, and often does, turn to new ideas in human relations and to means of dealing with complicated situations which must be adjusted. Of course such mental activity would never appear in a study limited to an examination of patent suggestions.

Another factor in this study, and one which tends to favor the younger man, should also be taken into account; the maturity of judgment of more experienced engineers.

(*Concluded on page 54*)



He advanced the bombing of Hiroshima by at least a year!



This is a "now it can be told" story of wartime research.

It started back in post World War I days when Dr. Harvey C. Rentschler, Director of Research for the Westinghouse Lamp Division, and Dr. J. W. Marden, an associate, decided to determine the melting point of a rare mineral . . . *uranium*.

In his unending search for an improved electric lamp filament, Dr. Rentschler wanted to find out if *uranium* would give better service than *tungsten*.

So Dr. Rentschler and his associates worked for about a year before they found a way to make pellets of pure uranium from which the melting point could be determined. Although uranium's melting point made it unsatisfactory for a lamp filament, Westinghouse continued to supply tiny amounts of the precious metal to colleges and research laboratories for experiments in nuclear physics.

(Little did they realize that their know-how would one day give America a head start in the race towards history's grimmest goal!)

For the most devastating war of all time had meanwhile blazed throughout the world—and scientists in many countries were feverishly trying to discover a method for unleashing the incredible energy concealed within the atom.

Then, early in 1942, Dr. Rentschler received a telephone call. The director of the atomic experimentation project at the University of Chicago wanted to know how soon Westinghouse could supply *three tons of pure uranium*!

Dr. Rentschler and his co-workers immediately went into action. They set up a miniature uranium "factory" in the Lamp Division laboratory—ultimately increasing their production of pure uranium from 8 *ounces to* 500 *pounds daily*, cutting its cost from $1,000 *to* $22 *a pound*.

And within a few months, Westinghouse had supplied *more than* three tons of the vital metal to the Chicago Metallurgical Project Office . . . where the famous "atomic pile" experiments were conducted. They also supplied uranium to physicists at Princeton University who did much to the pioneering work on the atomic bomb.

. . . . . It all started as an obscure experiment to find a *better* lamp filament—like many another quest for product improvement that goes on constantly in the great Westinghouse research laboratories.

But, today, Dr. Rentschler's work of 20 years ago is given full credit for advancing America's atomic bomb activities by at least a year!

Westinghouse

PLANTS IN 25 CITIES OFFICES EVERYWHERE

Tune in: TED MALONE — *Monday, Wednesday, Friday, 11:45 am, EST, American Network*

AGE OF INVENTION

(*Concluded from page 52*)

The older and more experienced engineers are unlikely to turn in inventions which, when less experienced, they might have thought worth-while: in other words, this study may include a number of innovations of younger men which, to a more mature person would not seem sufficiently important to report as a patent disclosure. This might appear to retard the rate of patent suggestions of older men.

Stimulation of Group Research

A group of men working together stimulate each other and knowledge gained in one field is often directly applicable to the solution of a problem in another field. Often a new idea would never occur to an individual except from the impact of other minds on his. Most effective advances in the development of electrical insulation have been accomplished in several research laboratories by bringing together a group of scientists and engineers trained in physics, chemistry, and electrical engineering. The younger and older men in the group stimulate each other's mental progress.

It may be that a study of inventions made by individual workers will indicate a lower age at which inventive ability reaches its maximum. After a man has tried to develop an invention commercially without an organization behind him, he is likely to decide soon that from an economic standpoint invention does not pay. Because of the difficulties and discouragements which beset the free lance inventors, he may turn his energies to other channels, thereby reducing his inventive activities in order to achieve more stable and certain employment. On the other hand, the worker in organized research activities is relieved largely of the burden of commercial development and exploitation and will continue his inventive activities for many years in accordance with his natural bent and abilities.

In contrast to the popular opinion that inventive genius reaches a peak in the early years of manhood and largely dies out before the age of 40, these studies appear to prove conclusively that inventive ability not only does not die out at that age, but under suitable conditions, actually reaches a maximum well beyond that age. Also, although complete supporting evidence is not yet available, there is strong reason to doubt that in the future, the majority of the important inventions will come from scientifically or technically untrained men. In the *World Almanac's* list a large percentage of the later outstanding American inventions were made by men with technical educations and associated with large manufacturing concerns. Certainly the simpler and more obvious inventions have been made, and, in a highly technological era, future contributions will necessarily be made, by those trained to understand and progress in more advanced topics. It is believed, therefore, that the picture given here may be as typical of the future as it is representative of the past.

Sixty years ago, when these laboratories were founded, research had little part in industry. Today the question in conducting research is not "whether", but "how". This organization stands ready to help the industrialist reach an effective answer.

SUN AND EARTH

(*Concluded from page 36*)

following a given coronal peak is still significantly heightened after one solar rotation plus four days, just as it is after four days.

In the coronal observations, the intermediate maximum at 19 days might be accounted for by discovery of a tendency for coronal maxima to occur on the sun approximately 180 degrees apart in solar longitude. Such a situation exists in the coronal configurations, and is sufficient to account for the intermediate peak in the graph.

By virtue of the close correlation of magnetic disturbances with disturbances of the radio-reflecting layers of the ionosphere this four-day relationship is highly significant in the prediction of the expected quality of radio communications. Detailed predictions of ionospheric conditions were prepared throughout World War II by the joint effort of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, and the Interservice Radio Propagation Laboratory of the National Bureau of Standards, with the assistance not only of the Climax solar observations, but also solar data from the U. S. Naval Observatory, the McMath-Hulbert Observatory, Mount Wilson Observatory, and a large number of amateur sunspot observers.

Throughout the war the Climax coronal observations were measured even before the spectrograph plates were washed or dried, and the results were coded for immediate wire transmission to Washington and to England. The Climax data contributed primarily in the short-term forecasts of severe communications disruptions.

The four-day correlation was discovered in observational data obtained near the end of a cycle of solar activity that actually terminated at the end of 1943. The correlation has been of lower validity in the first few years of the new 11-year sunspot cycle which is now well established. The reason for this is not known.

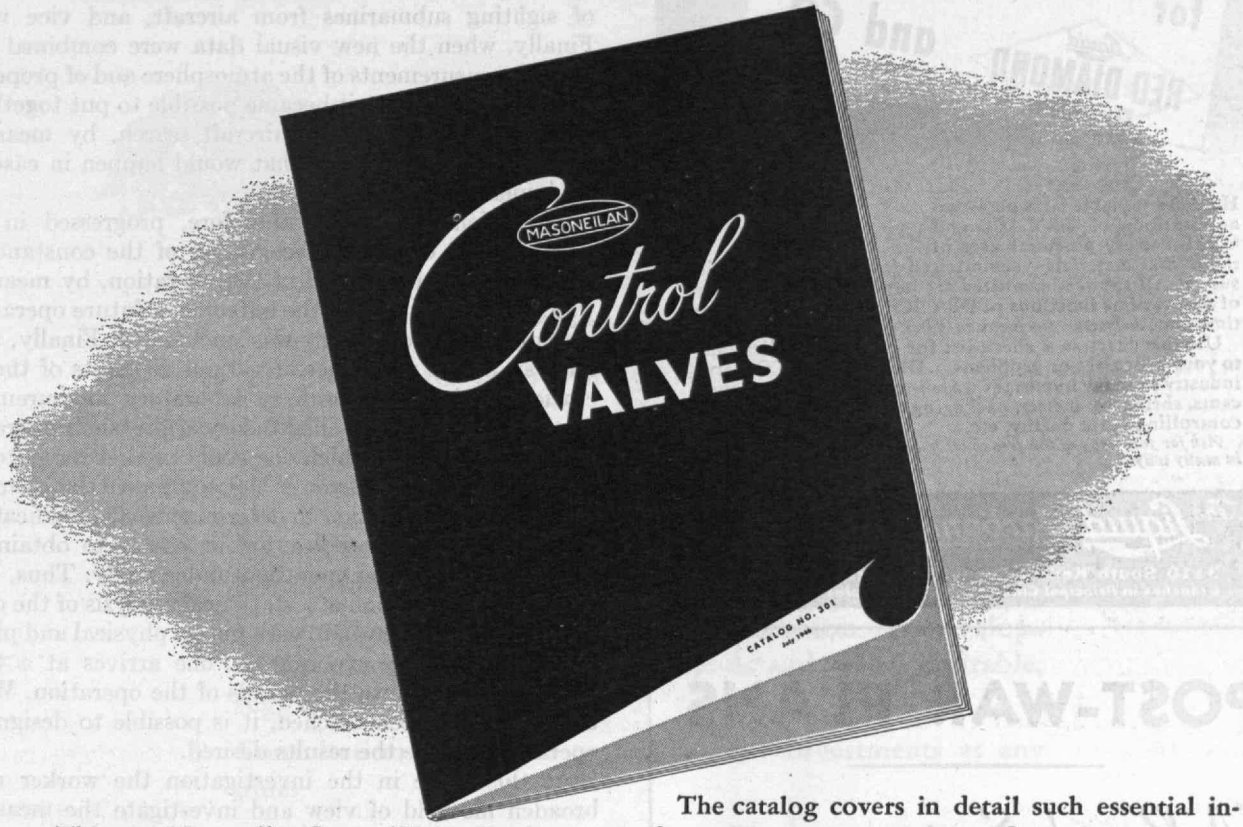
Many interesting and unexplained tendencies of solar phenomena, originally discovered for the sunspots, also show up in the corona and prominences. For example, at the end of 1943, upon termination of a complete cycle of solar activity, the regions of intense coronal emission changed from equatorial to higher latitude concentrations. Although the tests are not sufficiently sensitive to give strong verification, preliminary investigations also give some indication that the corona possesses a shorter period of rotation in the equatorial regions than at higher latitudes, as we have known to be true for sunspots.

The operation of the Climax installation has recently been taken over by the newly established High Altitude Observatory of Harvard University and University of Colorado, which plans the founding of a larger scientific station at Climax devoted to the wider aims of the pursuit of all forms of research for which high altitude laboratory facilities open throughout the year will prove beneficial.

With the new equipment planned for construction at the High Altitude Observatory at Climax, we hope to be able to produce a larger body of observational material of higher precision relating to all observable phenomena of the sun and its atmosphere. In contributing to the world's store of information about this important nearby star, the sun, we hope to bring astronomers a little closer to the day when they successfully can attempt a definitive explanation of the mysterious and complicated interrelated phenomena of the sun and earth.

Announcing . . .

THE NEW MASONEILAN CONTROL VALVE CATALOG



This new Masoneilan Control Valve Catalog contains complete factual information and covers every phase of control valve selection including C_v . . . Valve Flow Coefficient . . . which is a basic means for comparing flow capacities and characteristics.

The catalog covers in detail such essential information as control valve flow characteristics, flow coefficient and flow curves, materials and construction, selection of types, handwheels, dimensions, weights and other specification data. Write for your copy of this important catalog today.

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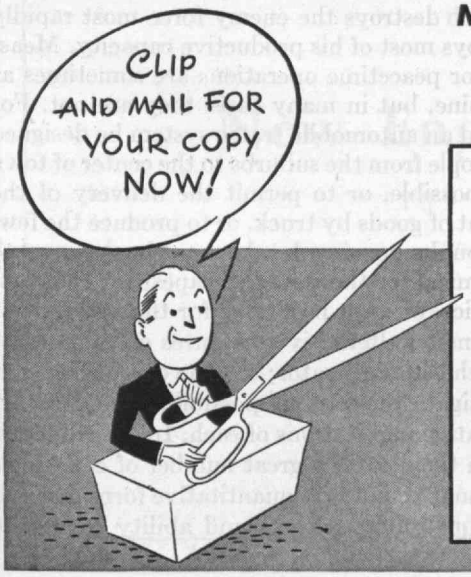

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OF MEN AND MACHINES

(*Continued from page 31*)

the details of the operation. In the aircraft *vs.* submarine case, for example, it proved advantageous to set up physiological experiments to determine the behavior of the human eye when scanning the horizon. Curiously enough, such experiments had not been done in detail before, and the work resulted in important and valuable new data concerning the use of the eye. This new knowledge could then be employed in the original problem to gain a much broader picture of the mechanism of sighting submarines from aircraft, and vice versa. Finally, when the new visual data were combined with optical measurements of the atmosphere and of properties of the ocean surface, it became possible to put together a fairly complete theory of aircraft search, by means of which one could predict what would happen in case the equipment were changed.

The scientific studies, therefore, progressed in two phases. First came the recognition of the constancy of certain quantities typical of the operation, by means of which one could predict the outcome of future operations as long as the equipment was unchanged. Finally, after analysis of the properties of various elements of the operation, and after subsidiary laboratory measurements were made, a fairly detailed theory of the whole operation was obtained, from which one could predict the outcome of future operations even if the equipment be changed. One is then in a position to determine what modifications of equipment or procedure are necessary to obtain the best results from the operation under study. Thus, by a judicious combination of a statistical analysis of the over-all results of an operation, with purely physical and physiological laboratory experiments, one arrives at a truly scientific insight into the details of the operation. When this stage has been reached, it is possible to design the operation to give the results desired.

At this stage in the investigation the worker must broaden his field of view and investigate the measures of value which must be applied to the operation. As soon as a detailed theory enables one to predict the changes in over-all results arising from changes in equipment of procedure, one must ask which result is better than the other and by how much it is better. In the case of operations of war, the measure is often easy to find: The operation is best which destroys the enemy force most rapidly or which destroys most of his productive capacity. Measures of value for peacetime operations are sometimes as easy to determine, but in many cases they are not. For instance, should an automobile traffic system be designed to transport people from the suburbs to the center of town as rapidly as possible, or to permit the delivery of the greatest amount of goods by truck, or to produce the fewest deaths? Should a housing development be designed to be most economical for the buyer, cheapest for the community to service, or most profitable for the builder?

Final decisions on alternative measures of value must be decided by the administrator; but the operations analyst can investigate the various possibilities and report on the quantitative implications of each. In any administrative decision there enter a great number of considerations which cannot be put into quantitative form. Knowledge of these qualitative aspects and ability to handle

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OF MEN AND MACHINES

(*Concluded from page 58*)

them are the proper functions of the administrator and are not the prerogatives of operations research. Unless he is to operate in a dual role of scientist and administrator, the operations research worker must work out those aspects of the problem which are amenable to quantitative analysis and report his findings to the administrator. The latter must combine them with the qualitative aspects mentioned above, to form a basis for the final decision.

Partnership for Progress

It is possible to set up similar partnerships between government or industrial administrators and operations analysts. In fact, it has already occurred in a few cases. Once the partnership is established there is no reason why operations research should not be as fruitful in aiding in the solution of peacetime problems as it was in helping solve military problems. As with problems of war, some operations will be much more fruitful to study than others. Traffic problems, for instance, are highly amenable, for data are easy to obtain, and changes in conditions (if not too drastic) can be produced to study the effects.

On the other hand, the design of city housing and facilities requires data which are difficult to obtain, the solution is strongly dependent on terrain and other individual circumstances, and operational experiments are difficult if not impossible. Research in telephone operation is not difficult because the whole system is under a more or less unified control. (In fact, operations research in this field has been going on for a number of years under the name of systems engineering.) Operations research in the heating of houses, however, might well be fruitless, because the fragmented nature of the industry makes difficult the gathering of data and makes well-nigh impossible any action on proposed solutions. Still the answers to such questions as to the best method of heating homes have their value to military as well as to civilian needs. If another war is likely to occur it would be desirable to know whether to encourage coal, oil, or electric heating in the homes in northeastern United States. Research on highway traffic might well result in suggestions for change in the design of automobiles, but the competitive nature of this industry might make it extremely difficult for the suggestions to be put into practice. It does not necessarily follow, however, that difficulty of effecting the recommendations of operations research is a valid reason for failure to apply scientific study to important problems of society.

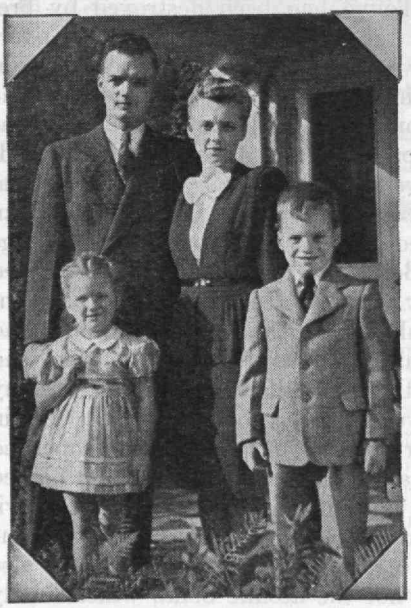
In England a number of the scientists prominent in operations research have recently been named as scientific advisers to various ministries in the British government. It is their duty to study the quantitative aspects of housing, communications, mining, and other technological and industrial processes in an effort to achieve a degree of social well-being not heretofore attained. Similar utilization of operations analysts in this country, as partners to municipal, federal, or industrial administrators, might bring results of far-reaching importance. Certainly wartime experiences give every expectation that peacetime extension of operations analysis will make its fair contribution toward the better, more rational, life which is so universally desired.

ALL THINGS HUMAN CHANGE . . .

1936

1940

1944



1946

Can you guess the rest of the pictures?

1950

1956

IF THIS were your family, you'd know what you *want* to see in future photographs. But will you?

Have the children's education and mother's needs been provided for—just in case you step out of the picture? Or, even if you live long past your span—will you be free from financial worry?

Perhaps you're all set—no matter what happens. But remember, *all things human change*. The perfect insurance program of a year ago may not fit your needs now. Wouldn't it be a good idea to check up on your policies with your New England Mutual Career Underwriter *today*?

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George Willard Smith, President *Agencies in Principal Cities Coast to Coast*
The First Mutual Life Insurance Company Chartered in America—1835

These Massachusetts Institute of Technology—and hundreds of other college men, represent New England Mutual:

Raymond P. Miller, '18, Salem Arthur C. Kenison, '19, Boston Blaylock Atherton, '24, Nashua Leland S. Person, '34, Rutland

WE HAVE OPPORTUNITIES FOR MORE MASSACHUSETTS INSTITUTE OF TECHNOLOGY MEN. WHY NOT WRITE DEPT. X-11 IN BOSTON?

MINORITY REPORT

(*Concluded from page 32*)

in some of this powder which he had made for medicinal uses, he apply'd it first in an iron barrel, and soon afterwards to the military art, and taught it to the Venetians. The effect is, that the art of war has since that time turned entirely on this one chemical invention, so that the feeble boy may now kill the stoutest hero. Nor is there anything, how vast and solid soever, can withstand it. . . . God grant that mortal men may not be so ingenious at their own cost, as to pervert a profitable science any longer to such horrible uses.

Death is death, defeat is defeat, and victory is victory by whatever means attained. They are no more sure and no more final if they are produced by an atomic bomb than if they are produced by black powder, by TNT, or by primitive tooth and nail. It is time to set aside our almost superstitious terror of the atomic bomb, to discount the pride of those who have made it and now gloat over the possession of its secret. It is time to evaluate it realistically. It is time to focus our attention on the problem, scarcely more urgent now than before, but certainly more clearly illuminated by the ineffable effulgence of the atomic bomb than by the flickering fires of the Byzantines. It is time to learn to live in peace with our neighbors.

A large part of Tokyo had been destroyed by fire, Japan was defeated and had already commenced overtures toward peace when atomic bombs were dropped on Nagasaki and Hiroshima. Under such circumstances the use of the atomic bomb was like kicking a man who was down, slapping a prisoner already shackled, a needless display of bravado. Without pursuing the ethical aspects of the matter, it was needless for victory. Japan was already defeated without the atomic bomb. Large parts of London, Berlin, and Warsaw were destroyed without it. Germany was defeated without it. And without the atomic bomb, in 1942 and 1943, Germany had conquered nearly all of Europe except Sweden and Switzerland, closed the universities and destroyed many libraries, made slaves of the people, reserved certain chosen specimens for breeding purposes, and commenced systematic extermination of others who were considered undesirable. All this without the atomic bomb. It is evident that the atomic bomb, if used, could not have done any greater injury to European civilization, as it is also evident that it was not the atomic bomb which finally averted its destruction. Some means must be found to prevent such atrocities from occurring again. And the means for this is not the atomic bomb.

Let us be realistic. The atomic bomb will win battles (so will intelligence), but it alone will not win wars. It will not win wisdom, nor peace, nor love of our neighbors. The control and regulation of it will yield no more important results than the control of black powder. It is not atomic energy, but the spirit of man, which must be rectified. Let us see the issue clearly, unblinded by the radiance of the chain reaction. We must find workable plans for procuring a permanent peace.

To a woman with an investment problem

There is no question about the ability of modern women to understand financial affairs quite as well as men. But the woman who manages her own investments faces a special problem in the constant advice that comes to her from well-meaning friends and relatives. As one woman wrote recently:

> "This 'piecemeal' advice only confuses me. Some of it is contradictory. How can I be sure that my present securities are the best I could own? If they are good investments today, will they be just as good tomorrow? Where can I find reliable answers to *all* my questions?"

The fact that a sound investment program cannot be built on haphazard advice. It should be based on a thorough study of the individual's resources and needs. The choice of investments should then be made by specialists who are guided by the findings of a balanced staff of experienced investment analysts.

Old Colony Trust Company has such a staff. We have many women customers whose investment problems are now our responsibility. They receive the care and attention which an organization of specialists is best qualified to give, and which is vital to sound investment today.

The woman who seeks investment advice is invited to consult Old Colony Trust Company for an explanation of the services we can render.

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ROBERT CUTLER, *President*

THE WRECK OF MATTER

(*Continued from page 28*)

appropriate time is well within the capacity of modern technology.

That is easy enough but how will the scholar know what to ask for? This is a knotty problem but its solution is not outside of possibility. To solve it requires in the first instance a complete coding of what is in all the stored works and a duplication of this code in every scholarly library or center of scholarship. Here all the coded references will be screened for the scholar, along lines he has predetermined, by rapid selector devices capable of scanning thousands of references per minute. Provided with a quantity of references (of which a good many may still represent false trails) and without destroying the utility of the system, the scholar will then read on these card clues, abstracts and critical comment which give him a hint as to whether he wants to see the source. When he does, the proper punching of buttons will put into action the televising process previously described. Such a system will in no way prevent photo-reproduction of source material where the scholar prefers such examination to that made possible by a television screen. Such a system can be operated as a co-operative venture of many large libraries without the alienation of titles needed for the national center, albeit with somewhat more confusion, and considerably more cost. It cannot operate in a system which circulates library material for it is critical that all the source material shall be immediately available for televising to any scholar anywhere.

It can be argued that the annual budgets of most libraries — if diverted from acquiring, maintaining, catalogu-

(*Continued on page 65*)

THE WRECK OF MATTER

(*Continued from page 64*)

ing, storing, circulating, and keeping track of 1,000,000 or more books — could easily encompass the purchase and maintenance of the new library machinery and in addition leave something over for research. Each library would, of course, retain a collection of the most important works at such a scale (say the 200,000 volumes of the new undergraduate library of Harvard) that not all readers would be condemned to the mechanistic process which would be reserved largely for the convenience of the scholar. Each library would also maintain a certain amount of current and not as yet coded material to be discarded when the coding was completed.

Coding Human Learning

The crux of such a system would, of course, lie in the coding. For the billions of words already written and stored only a slow progress might be possible. It is possible to install a coding process for everything published after a given day and, in a not too distant future. This would comprise a coding of a large part of the past literature.

But, even then, the job of coding, the intellectual skill required, the time consumed, the self-sacrifice required of the coders is almost inestimable. These coders would have to possess the best minds; they could not be mere clerks. To get all these best minds to contribute the codification of even a few volumes a year per man would require a co-operation never yet approached by the company of scholars. The scholar is at least as selfish as the ordinary man; probably he is more so. Unless the scholars as a body would enter into such a project it would be predoomed to failure; it might fail even if they did join such a crusade.

Against such a pooling of resources and talents would be raised the ambitions of librarians asked to give up their treasures which are sometimes the only way the importance of their libraries can be measured. Against such a program would be raised the pride of trustees, college presidents, collectors of rare and even of uncut books, donors of oak and marble, and most of all the pride of the Alumni. There would be fear of over-centralization, fear of mechanism. Finally we might expect the apathy of scholars presented to a proposal which called upon each to do a volume of work for the good of all which would in no way enhance his individual prestige. How far away do all these imaginable adverse forces place the library millennium?

I put this question with no tongue in cheek. At this very moment I have the task of planning for a new library building in our own institution. Shall this library building be less forward looking than the apparatus for testing the flight characteristics of planes, for measuring radioactivity, for exploring the nucleus? Shall it fail to take advantage of the knowledge in our own institution of rapid selectors, radio, and television? What are we to do?

Step toward the Future

By the generosity of Mr. J. Willard Hayden and his co-trustees in the Charles Hayden Foundation, Technology

(*Continued on page 66*)

THE WRECK OF MATTER

(*Continued from page 65*)

has now in hand about $2,500,000 with which it must construct the Charles Hayden Memorial Library as soon as governmental permits can be obtained. This means that the planners of this new building cannot postpone their planning long enough to learn whether any of the conjectures previously made have likelihood of soon attaining reality. No one in his senses would dare build a building today founded in the assumption that they would, and that all previous library thinking could, therefore, be discarded.

The building has to serve four functions: it must offer *a* tool for the undergraduate and the scholar in science and engineering; it must offer *the* tools for the student of social science and the humanities; it must offer extra-curricular fare in non-scientific fields to whet the undergraduate appetite; and it must apply our forces to new methods of librarianship through research. Each of these requires a somewhat different building.

On the one hand, for the student of science, the building is to offer the management for the scholarly branch libraries in the several disciplines which, in the present state of librarianship, are most conveniently located near to the practitioners of the disciplines. It must serve as central repository for older, and for fringe, material; it must supply a broader base of reference than can practically be furnished in the branches; it must take care of the underclassman so that the advanced libraries can be relieved of him to the benefit of all concerned. It must be ready to assume a still larger role should mechanism become important in librarianship; for when and if it does, centralization will clearly be indicated.

For the student of the humanities the library must make quite a different provision. For him the library is, in literal truth, the laboratory. Accordingly it is desirable that faculty, seminar, and conference room, and library materials all be in the same area — indeed in the same building. This requires an arrangement quite different from that of branch library, laboratory, and class room in the technological departments.

In an institution such as Technology the curricular time available for study of the humanistic subjects is inevitably short — too short perhaps — to produce a well-rounded man. There rests a further responsibility then to provide stimulus to the underclassman and the senior — to compete if you will with the laboratory for his spare time by feeding him with at least the *hors d'oeuvre* which may stimulate an appetite on his part for further tasting of other

(*Continued on page 68*)

THE WRECK OF MATTER

(*Continued from page 66*)

types of man's thought. A large part of this responsibility devolves upon the new library.

Mechanistic Diffusion of Knowledge

Finally, research must incessantly be carried on, with the special tools at Technology's disposal, to help in the determination as to how far the world can go along lines indicated in the previous text. To accomplish this the library must not only take account of possibilities in codes, selectors, television, and microphotography but also of developments in visual and aural aids to learning. Specifically, laboratories are required in which methods may be tested on both the mechanical and intellectual scales; future staff members must be selected who will be able to contribute to such achievements, be temperamentally anxious to contribute, and be desirous of seeing the possibilities and not the difficulties.

In time any one of these present purposes may become archaic; scientific literature may be organized quite differently, teaching in the humanities may become divorced from the library, extra-curricular stimuli may be provided by other means or may even become unnecessary, research may reach the end of any profitable road. Accordingly no building can be profitably contrived which will freeze any one of these activities either in form or in scale.

To resolve this dilemma will not be easy of course. We shall make our building of equal story heights and of such floor structure that every area can accommodate the full weight of books as now stacked or, equally, will provide reading space, teaching space, laboratory space, or viewing screens and rapid selectors. This building will have almost no impedimenta to the use of space and this is its principal characteristic.

There has to be, of course, a first program for the use of space. The mechanical equipment and the laboratory are to be housed in a half basement. The first floor takes advantage of the building's handsome site on the Charles River (between the main building of M.I.T. and Walker Memorial) and provides an "Avenue of Culture" along which the student will naturally pass in going from the educational area to the recreational area. On this avenue will be an exhibition gallery, the distinguished Dard Hunter Paper Museum, an undergraduate reading room, the recreational reading collection, and the libraries of English and History. No effort will be spared to make this the most attractive place physically in the entire Institute. It is hoped that the intellectual attraction will be no less apparent.

The second floor, which is not on a through passage, will house both library administration and the scholarly over-all reference collections and source material for all disciplines plus the special serious collections in economics and social sciences which pass under the name of the Dewey Library. The third floor will house the humanities faculties (and also their seminars) and a substantial audio-visual center embracing the most contemporary applications to education of the arts of recorded sound and light.

For anyone who wants to jump to the stars this may seem earth-bound enough. We will do what one institu-

(*Concluded on page 70*)

THE WRECK OF MATTER

(*Concluded from page 68*)

tion may to accelerate progress toward a more efficient librarianship. But the space vehicle of librarianship which might carry us some day to the absorbing visible planets, still so tantalizingly out of reach, will not be the product of a single institution. It will require a very large movement of scholars, of librarians, of financial sponsors, and perhaps of government before anything of serious import may ensue. Still the problem is real enough; Anatole France's fancy, Rider's extrapolations, Hardin's Gordian-knot-cutting may none be idle prophecy unless the more imaginative Bush proposal is grappled with tenaciously. The grappling must be without cynicism or selfishness and must be performed simultaneously by very many more people than can be found on our acreage on the Charles River.

THE TABULAR VIEW

(*Concluded from page 10*)

Widespread Knowledge of the elements of nutrition and sanitation might have reduced the casualties among native and American defenders of Bataan is the opinion (page 22) of SAMUEL A. GOLDBLITH, '40, whose experiences as a prisoner of war at Camps O'Donnel and Cabanatuan enable him to speak with vivid first-hand knowledge. Mr. Goldblith is now research assistant in the Institute's Department of Food Technology and is studying for an advanced degree.

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Each man listed below will have information about positions for M. I. T. Graduates who want to locate in his particular area

ALABAMA
ROBERT C. STOBERT '12, P. O. Drawer 1392, Birmingham

ARKANSAS
LESLIE A. JACKSON '09, Manager, Little Rock Municipal Water System, Little Rock

CALIFORNIA
EDWARD J. RILEY '09, Graybar Electric Company, Inc., Ninth and Howard Streets, San Francisco
FORD W. SAMMIS '28, 433 South Spring Street, Los Angeles 13

COLORADO
ALFRED E. PERLMAN '23, Denver and Rio Grande Western Railroad Company, Denver 1

CONNECTICUT
FREDERICK W. GREEN '32, Nash Engineering Company, Wilson Avenue, South Norwalk (Bridgeport area)
GEORGE L. MYLCHREEST '10, 238 Palm Street, Hartford
CHARLES E. SMITH '00, Railroad Office Building, New Haven

DISTRICT OF COLUMBIA
WILLIAM C. MEHAFFEY '17, 1630 North Greenbrier Street, Arlington, Virginia

FLORIDA
GEORGE W. SIMONS '15, Hildebrandt Building, Jacksonville
CLARENCE P. THAYER '23, 4212 N. W. Sixth Avenue, Miami
FRANKLIN O. ADAMS '07, 305 Morgan Street, Tampa

GEORGIA
WILLIAM E. HUGER '22, 11 Marietta Street, N.W., Atlanta 1

ILLINOIS
ROBERT W. CLYNE '30, American Steel Foundries, 400 North Michigan Ave., Chicago 11

INDIANA
FRANK C. BALKE '14, Balke and Krauss Company, 427 West Market Street, Indianapolis

KANSAS
FRED C. KOCH '22, Winkler-Koch Engineering Co., 335 West Lewis Street, Wichita

KENTUCKY
TINSLEY W. RUCKER III '31, The Crescent Panel Company, 32d and Market Streets, Louisville 12

LOUISIANA
THEODORE O. HOTARD '12, 221 Pelican Avenue, New Orleans 14

MAINE
FRANK A. KNIGHT '38, Eastern Corporation, Bangor
LEWIS D. NISBET '09, 44 Montrose Avenue, Portland

MARYLAND
GEORGE W. SPAULDING '21, 1605 Lexington Building, Baltimore 1

MASSACHUSETTS
ROBERT F. BURNETT '10, 85 North Main Street, Fall River
A. RUSSELL PIERCE, JR. '31, Palmer Scott Boatyard, New Bedford
LYNN WETHERILL '25, High Voltage Bushing Engineering Division, General Electric Company, 100 Woodlawn Avenue, Pittsfield
ALBERT D. KING '32, De Bell and Richardson, 3 Post Office Alley, Springfield

MICHIGAN
ADAM K. STRICKER '29, 1227 Bishop Road, Grosse Point Park, Detroit

MINNESOTA
LELAND CLAPPER '09, 5600 London Road, Duluth
CHARLES W. DREW '19, Minneapolis-Honeywell Regulator Company, Minneapolis

MISSOURI
HARRY L. HAVENS '09, Havens Structural Steel Company, 1713 Crystal, Kansas City
WESLEY W. WEDEMEYER '30, Wedemeyer and Hecker, Architects, 319 North Fourth Street, St. Louis 2

MONTANA
WALTER R. C. RUSSERT '18, Anaconda Copper Company, Butte

NEBRASKA
JOHN M. HANLEY '30, Northern Natural Gas Company, Aquila Court Building, Omaha

NEW HAMPSHIRE
BLAYLOCK ATHERTON '24, 142 Main Street, Nashua

NEW JERSEY
GEORGE A. CHUTTER '21, 109 Central Avenue, Glen Rock (Newark area)

NEW YORK
ANDREW F. ALLEN '12, State Department of Health, Albany
THOMAS H. SPELLER '29, General Engineering Company, 785 Hertel Avenue, Buffalo 7
JOHN C. FRUIT '02, Equitable Life Assurance Society of U. S., 393 7th Avenue, New York 1
RAYMOND G. BROWN '16, Comstock and Westcott Inc., Niagara Falls
C. KING CROFTON '22, 1132 Lincoln-Alliance Bank Building, Rochester 4
A. J. TACY '27, Room 645, Building No. 2, General Electric Company, Schenectady
J. MURRAY HASTINGS '13, 606 Hills Building, Syracuse

OHIO
JAMES B. HOLDEN '30, 276 Sundale Road, Akron
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HAROLD L. LANG '09, Carnegie Institute of Technology, Pittsburgh 13
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LOUIS MORSE '96, York Corporation, Roosevelt Avenue, York

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DANA M. WOOD '06, 619 Union Building, TVA, Knoxville
DONALD W. SOUTHGATE '11, Nashville Trust Building, Nashville 3

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GEORGE M. GADSBY '09, Utah Power and Light, Kearns Building, Salt Lake City

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Recapitulation

The first of October, 1946, marked the beginning of the seventh month of the seventh year of the M.I.T. Alumni Fund. It seems appropriate, in this first fall issue of The Review, to pause momentarily and look backwards, the better to adjust our sights for the future.

The M.I.T. Alumni Fund was established in 1940 to provide a means by which Alumni could support the Institute financially in whatever degree they deemed fit. It was expressly stated that these gifts were to be used for capital expenditures only, at the Fund Board's recommendation. To date no such expenditures have been made, except in a few minor instances. The uncertainties of the war years and of the immediate postwar period made it seem advisable to wait until more settled times, and our annual gifts have been allowed to accumulate as a consequence.

The results of our first year were unspectacular. They were, however, encouraging. They gave promise that the Alumni, by whose expressed desire the Fund was established, would back it up as its need became more widely appreciated. Each year has shown steady increases, both in number of contributors and in amount. The first year's total of $65,000 had grown to $165,000 at the end of the sixth year. On October 1, 1946, almost $25,000 more had been contributed than at the same time last year. Furthermore, last year the number of Alumni who gave to their Fund exceeded 10,000. It has, indeed, fulfilled that early promise.

The accumulated total of our gifts to M.I.T. is now in excess of half a million dollars. Although the Board has yet to decide how this sum is to be spent, the President's Report for 1946 shows clearly how much it is needed. Your gifts of the past few years will go far toward satisfying a part of those needs.

TECHNOLOGY MEN IN ACTION

M.I.T. MEN AT WAR

Up to October 10 over 9,584 Institute Alumni, including 38 Admirals, 12 Commodores, and 97 Generals, were reported as being in the active naval or military services of the United Nations. Among the new promotions to be reported are Commodore A. Loring Swasey '98, Commodore Henry R. Oster '21, Commodore Werner W. Baumeister '23, Rear Adm. Albert F. France '24, Brig. Gen. Ivan W. Miller '25, and Commodore George A. Seitz '29. There were 322 Alumni who had been decorated, and 226 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

DECORATIONS

1898 Swasey, A. Loring, *Commo.*, U.S.N., Legion of Merit.

1910 Bell, Frank F., *Col.*, U.S.A., Legion of Merit — as commanding officer of the 373rd Engineer General Service Regiment; for clearing, opening up, and reconstruction of the port of Le Havre, France.

1916 Blakney, Raymond B., *Maj.*, U.S.A., Bronze Star.

1921 Price, Xenophon H., *Col.*, U.S.A., Bronze Star — for meritorious service as engineer member of the War Department Observers' Board in the European Theater of Operations.

1922 Robb, Russell, *Col.*, U.S.A., Legion of Merit.

1924 Gegan, John B., *Lt. Col.*, U.S.A., Croix de Guerre.

Maynard, Perry C., *Col.*, U.S.A., Legion of Merit — for outstanding contributions in the development on means for transmitting throughout the world unprecedented volumes of military and war-related messages.

1927 Berkeley, William P., *Lt. Col.*, U.S.A., Legion of Merit.

1928 *Petrie, Malcolm O., *Capt.*, U.S.A., Silver Star, posthumously — for continuous and conspicuous gallantry in action.

Sakouta, Vitaly M., *2nd Lt.*, U.S.A., Croix de Guerre with star; Bronze Star.

1931 Humphreys, George C., *Comdr.*, U.S.N., Legion of Merit — for ably solving many problems encountered by the Army in transporting supplies and material to overseas theaters.

1933 Love, Robert M., *Col.*, U.S.A., Distinguished Service Medal — for exceptional meritorious service as deputy commander of the European ferrying division of the Air Transport Command and later commander of the A.T.C. West Coast Wing.

Spiller, John H., *Capt.*, U.S.N., Legion of Merit.

1934 Fidler, Harold A., *Maj.*, U.S.A., Legion of Merit.

1935 Powers, William F., *Col.*, U.S.A., Bronze Star — for planning and directing the initial stages of construction for the United States Forces in Great Britain.

1939 Honnell, Pierre M., *Col.*, U.S.A., Legion of Merit — distinguished himself as an instructor in the department of chemistry and electricity, United States Military Academy, and made a significant contribution in the planning and engineering supervision of the new electronics laboratory at West Point.

Howard, John H., *Lt.*, U.S.N., Legion of Merit — for outstanding service while on duty with the Division of Naval Communications.

2–44 Brown, Kenneth S., *Comdr.*, U.S.N., Navy-Marine Corps Medal.

Lawson, James T., *1st Lt.*, U.S.A., Purple Heart, Silver Star — Luxembourg; Bronze Star — Germany.

NEW LISTINGS

U.S.A.

1926 Hoar, William H., *Maj.*
1929 Badger, George F., *Maj.*
1942 Denhard, William G., *T.4.*
McHugh, Joseph R., *S.Sgt.*
1943 Granese, Andrew M., *1st Lt.*
6–45 Beaton, William C., *Lt.*
2–46 Dowling, William C., Jr., *Pvt.*
Folts, Frederick W., *Pvt.*
Robinson, Donald E., *Pfc.*
Smith, Arthur, *Pvt.*

U.S.N.

1919 Chadwick, Noel, *Lt. Comdr.*
1923 Ludlow, George H., *Comdr.*
1943 Millar, Ronald L., *S.1c.*
★ Wolf, Warren F., *Lt. (j.g.)*
10–44 Ross, Harold, *Ens.*
Scott, George W., Jr., *Lt. Comdr.*
2–46 Deal, Joseph D., Jr., *Ens.*
Dedell, Harry C., Jr., *Ens.*
Dionne, Earl J., *Ens.*
Maney, John W., *Ens.*
Mays, Charles H., *Mid.*
Smith, Charles R., *S.1c.*

CHANGES IN RANK

U.S.N.

1898 Swasey, A. Loring, *Capt.* to *Commo.*
1917 Andrews, George A., *Lt. Comdr.* to *Comdr.*
1921 Oster, Henry R., *Capt.* to *Commo.*
1922 Fish, Howell C., *Comdr.* to *Capt.*
1923 Baumeister, Werner W., *Lt. Comdr.* to *Commo.*
1924 France, Albert F., *Capt.* to *Rear Adm.*
1927 Hammond, Joseph W., *Comdr.* to *Capt.*
O'Donovan, Richard L., *Lt.* to *Lt. Comdr.*
1928 Farnsworth, John G., *Comdr.* to *Capt.*
Hale, Peter G., *Lt. Comdr.* to *Capt.*
Janes, George N., *Lt. (j.g.)* to *Lt. Comdr.*
Riley, Frederic D., Jr., *Lt. Comdr.* to *Comdr.*
1929 Seitz, George A., *Comdr.* to *Commo.*
1930 Turner, Thomas A., Jr., *Comdr.* to *Capt.*
1931 Anderson, William W., Jr., *Lt.* to *Capt.*
Blaisdell, Norman E., *Lt.* to *Comdr.*
1932 Fenno, Charles A., Jr., *Lt.* to *Lt. Comdr.*
Honsinger, Leroy V., *Comdr.* to *Capt.*
1934 Lippitt, Kendrick H., *Lt. (j.g.)* to *Lt. Comdr.*
Mann, Robert E., *Lt.* to *Lt. Comdr.*
1935 Brown, Richard R., *Ens.* to *Lt. (j.g.)*
Mills, Blake D., Jr., *Lt.* to *Comdr.*
Perkins, Robert E., *Comdr.* to *Capt.*
1936 Anderson, Richard K., *Lt.* to *Comdr.*
Brown, C. Donald, *Lt. Comdr.* to *Comdr.*
Webster, Homer F., *Lt. Comdr.* to *Comdr.*
1937 Steinhardt, Lawrence R., *Lt.* to *Lt. Comdr.*
1938 Gibson, William G., *Ens.* to *Lt. (j.g.)*
1940 Morgan, Philip C., Jr., *Lt.* to *Lt. Comdr.*
Pieczentkowski, Herman A., *Comdr.* to *Capt.*
Reynolds, Paul A., *Lt. (j.g.)* to *Lt. Comdr.*
Rivero, Horacio, *Lt.* to *Capt.*
Robertson, Richard G., *Ens.* to *Lt. (j.g.)*
1941 Booth, Alfred B., Jr., *Ens.* to *Lt. (j.g.)*
Fulton, Robert B., 2nd, *Lt.* to *Comdr.*
Kosztyla, Camille J., *Lt.* to *Lt. Comdr.*
Morse, John H., Jr., *Lt.* to *Comdr.*
Price, William N., *Lt.* to *Comdr.*
1942 Degen, Daniel J., *S.1c.* to *A.E.T. M.Sc.*
Gibson, Scott K., *Lt. Comdr.* to *Comdr.*
Taylor, Maurice E., *Lt. (j.g.)* to *Lt. Comdr.*
1943 Leader, James W., *Ens.* to *Lt. (j.g.)*

U.S.M.C.

1925 Miller, Ivan W., *Col.* to *Brig. Gen.*

AUSTRALIA

Army

1913 Lemaire, Lionel H., *Col.* to *Brig.*

RANKS NOT PREVIOUSLY PUBLISHED

1941★ Logsdon, Thomas M., *Lt.*, U.S.N.
1943 Malloch, James A., Jr., *Capt.*, U.S.A.

LIBERATED PRISONERS

1934 Bateman, Edward L., Jr., *Capt.*, South African Army — had been a prisoner of war since fall of Tobruk.

1940 Kaplan, Milton J., *Lt.*, U.S.A. — was missing in European area.

van Swaay, Jan M., *Lt.*, Netherlands East Indies Army — from Hitachi prisoner of war camp near Tokyo.

1941 Fulton, Robert B., 2nd, *Comdr.*, U.S.N. — from Zentsuji prisoner of war camp in Japan.

1943 Miller, Andrew, Jr., *Corp.*, U.S.A. — Philippines.

2–44 McCandliss, Robert K., *Lt.*, U.S.A. — Germany.

10–44 Dieckmann, Steffen F., *Pfc.*, U.S.A. — Germany.

Hagopian, Robert, *S.Sgt.*, U.S.A. — had been reported missing in action in Belgium.

Phillips, James L., *Lt.*, U.S.A. — Germany.

Steiner, Harold A., Jr., *Lt.*, U.S.A. — Germany.

6–45 Lake, John W., Jr., *Pfc.*, U.S.A. — Germany.

Webb, George W., Jr., *Lt.*, U.S.A. — Germany.

CASUALTIES

1907 *Wilkins, Harold S., *Col.*, U.S.A.
1913 *Means, Alan H., *Col.*, U.S.A.
1921★ Raymond, Fred L., *Lt.*, U.S.N. — on prison ship.
1922 *Allen, Henry C., *Lt.*, U.S.N.
1925 *Mize, Charles R., *Capt.*, U.S.A. — in Manila.
1927★ Gerst, George S., *Lt.*, U.S.A. — plane mission between Bougainville and Gaudalcanal.
1928 *Petrie, Malcolm O., *Capt.*, U.S.A. — a prisoner of the Japanese.
1932★ Crocker, Otis W., *Capt.*, U.S.A.
1933 *Carle, E. Richards, *Capt.*, U.S.A. — of cerebral malaria following Bataan Death March.
★ Harper, Thomas, Jr., *Sgt.*, U.S.A. — near Manila.
*Latimer, William J., *Maj.*, U.S.A. — of acute colitis while a prisoner of war of the Japanese government.
*Mitchell, Floyd A., *Lt. Col.*, U.S.A. — on Philippines while a prisoner of war.
1934★ Gibson, George D., *Lt. Comdr.*, U.S.N.
★ Parker, Frank G., Jr., *Maj.*, U.S.A. — flying bomber from Australia over New Guinea.
1936★ Bosworth, Lawrence A., *Maj.*, U.S.A. — when Japanese prison ship was sunk.
1937★ Breitling, George T., *Lt.*, U.S.A. — on prison ship while being transferred from the Philippine Islands.
★ Clark, Lincoln R., Jr., *Lt.*, U.S.A. — was prisoner of war at Cabanatuan; ship bombed in Subic Bay on way to Japan.
★ Haggerty, Robert F., *Maj.*, U.S.A. — when prisoner of war ship was sunk.
★ Weschler, Charles J., *Lt.*, U.S.N. — aboard a Japanese prison ship.
*Wirtz, Elmer C., *Capt.*, U.S.A. — of cerebral malaria at Cabanatuan prison camp.
1938★ White, William T., *Yeoman*, U.S.N.
1939★ Putnam, Henry W., *Capt.*, U.S.A. — over Tokyo.
1940★ Bernd, Peter P., *Capt.*, U.S.A. — while on Japanese prisoner of war ship being transferred from Philippine Islands to Japan; ship sunk in South China Sea.
★ Fodale, Charles B., *Lt. (j.g.)* U.S.N.
★ Nash, Lloyd W., *Maj.*, U.S.A. — over Belgium.
★ van Schaick, John, *Sgt.*, U.S.A.
1941★ Jerome, Frank J., 3rd, *Lt.*, U.S.A.
★ Logsdon, Thomas M., *Lt.*, U.S.N.
★ Wiener, Richard S., *Lt.*, U.S.A.
1942★ Root, John D., *Capt.*, U.S.A. — on special weather observation during combat mission over northwestern France.
1943★ Jenkins, Cornelius A., U.S.A. — Germany.
★ Van Burgh, Lisle, *Lt. (j.g.)*, U.S.N. — plane on reconnaissance patrol disappeared over Formosa Straits area.
★ Wolf, Warren F., *Lt. (j.g.)*, U.S.N.
2–44★ Vail, Derrick T., 3rd, *Sgt.*, R.C.A.F. — off the coast of England on an operational flight.
10–44★ Kelley, James E., *Pvt.*, U.S.A.
6–45★ Robinson, William R., *Pvt.*, U.S.A.
★ Wardwell, Theodore M., Jr., *Pfc.*, U.S.A.
2–46 *Goodman, Edmund G., *T.4.* U.S.A. — of illness contracted while in the Philippines.

★ Killed in Action † Missing in Action Prisoner of War * Died or Killed in Service ** Wounded

ALUMNI AND OFFICERS IN THE NEWS

Promotions and Appointments

¶ For GODFREY L. CABOT '81, elected president of the Fédération Aeronautique Internationale.

¶ For WILLIAM D. COOLIDGE '96, appointed to head the new General Electric atomic research and development laboratory at the Hanford Engineer Works near Richland, Wash.

¶ For WILLIAM B. BOGGS '04, elected one of the councilors for Quebec of the Canadian Institute of Mining and Metallurgy.

¶ For CLARENCE D. HOWE '07, appointed to membership in the Imperial Privy Council of Canada.

¶ For BARNETT D. GORDON '16, named a trustee of the Lowell Textile Institute.

¶ For A. C. CARLTON '17, made executive director of the museum of the Franklin Institute in Philadelphia.

¶ For CHARLES S. VENABLE '17, elected president for the current year, and JOHN H. SCHAEFER '26, elected a member of the board of directors for a three-year term, of the Industrial Research Institute.

¶ For EDWARD L. COCHRANE '20, Vice-admiral, U.S.N., appointed as chief of the Material Division.

¶ For ALBERT L. EDSON '21, designated as manager of the Laurence G. Hanscom Airport at Bedford, Mass.

¶ For HAYDEN B. KLINE '24, elected to the newly created post of executive vice-president and to membership on the executive committee of the Industrial Rayon Corporation.

¶ For ARTHUR F. JOHNSON '26, named as manager of the Longview, Wash., plant of the Reynolds Metals Company.

¶ For MICHAEL G. KELAKOS '35, named director of the chemical division of the International Secretariat of the Inter-Allied Reparations Agency in Brussels, Belgium.

¶ For ALVAR AALTO, staff, elected president of Finland's Arkitekförbund.

In the Bookstalls

¶ By WALTER H. KILHAM '89, *Boston After Bulfinch, An Account of Its Architecture, 1800–1900*, Harvard University Press, 1945.

¶ By CHARLES G. ABBOT '94, *The Earth and the Stars*, D. Van Nostrand Company, 1946.

¶ By PAUL W. LITCHFIELD '96, *The Industrial Republic, Reflections of an Industrial Lieutenant*, Corday and Gross Company, 1946.

¶ By MILAN V. AYRES '98, *Instalment Mathematics Handbook*, Ronald Press Company, 1946.

¶ By DAVID O. WOODBURY '21, *Builders for Battle*, E. P. Dutton and Company, 1946.

¶ By WALTER H. NEWHOUSE '23, as editor and chief contributor, *Processes of Ore Deposition*, National Research Council.

¶ By HENRY B. KANE '24, *The Tale of the Wild Goose*, sixth in the series, "Wild World Tales," Alfred A. Knopf, 1946.

Honors by Degrees

¶ For KARL T. COMPTON, President, the honorary degree of doctor of science from New York University.

¶ For FRANK C. STOCKWELL '07, the honorary degree of doctor of engineering from Stevens Institute of Technology.

¶ For CHARLES A. KRAUS '08, the honorary degree of doctor of science from Brown University.

¶ For JOHN I. B. LARNED '08, Suffragan Bishop of Long Island, the honorary degree of doctor of laws from Hobart College.

¶ For LUIS DE FLOREZ '11, Rear Admiral, U.S.N.R., the honorary degrees of doctor of science from Tufts College and doctor of engineering from Stevens Institute of Technology.

¶ For JEROME C. HUNSAKER '12, the honorary degree of doctor of engineering from Northeastern University.

¶ For TIMOTHY E. SHEA '19, the honorary degree of doctor of science from Columbia University.

¶ For NORBERT WIENER, staff, the honorary degree of doctor of science from Tufts College.

Periodical Appearance

¶ By WALTER R. INGALLS '86, with "The Great Lead and Zinc Mines," in *Mining and Metallurgy* for September.

¶ By JOHN B. WILBUR '26, with "The Action of Impulsive Loads on Elastic Structures," in the *Journal of the Boston Society of Civil Engineers* for July.

¶ By SHEPARD ROBERTS '38 and ARTHUR R. VON HIPPEL, staff, with "A New Method of Measuring Dielectric Constant and Loss in the Range of Centimeter Waves," in the *Journal of Applied Physics* for July.

¶ By BERNARD F. GREENE '40, with "Ship's Lighting and Dark Adaptation," in the *Journal of the American Society of Naval Engineers* for May, and "Natural Light Reflected from the Ceiling," in the *Illuminating Engineering* transactions for June.

¶ By LAWRENCE E. WELCH '40 and HARRIE M. QUACKENBOS, JR., '41, with the "Relation between the Impact and Flexural Tests for Molded Plastics," in the *Transactions of the American Society of Mechanical Engineers* for July.

¶ By DUGALD C. JACKSON, staff emeritus, with "Willis Rodney Whitney ['90], An Appreciation Based on Broderick's Recent Biography," in *Mechanical Engineering* for August.

¶ By RONALD H. ROBNETT, staff, with "Control of Research and Development Costs," in the *Bulletin of the National Association of Cost Accountants* for July 15.

Assorted Honors

¶ For WILLIS R. WHITNEY '90, recipient of the first Industrial Research Institute medal, awarded on October 17 "for his outstanding contributions to the field of industrial research as a distinguished scientist, a pioneer of industrial research, and a leader and molder of men."

¶ For WILLIAM D. COOLIDGE '96, appointed an honorary member of the Société Française des Electriciens, "in recognition of the help that he has given to the science and industry of electricity."

¶ For CHARLES-EDWARD A. WINSLOW '98, made an honorary member of the Connecticut Society of Civil Engineers.

¶ For ANDREY A. POTTER '03, to whom the special June issue of the *Purdue Engineer* is dedicated in observance of his silver anniversary as dean of engineering at Purdue.

¶ For CHARLES CAMSELL '09, in whose honor the Edmonton Military Hospital in Canada was renamed on August 26 the Charles Camsell Indian Hospital.

¶ For RUFUS E. ZIMMERMAN '11, winner for 1946 of the American Society for Metals' medal for the advancement of research.

¶ For VICTOR DOLMAGE '17 and C. E. G. Brown, as joint authors, awarded the Barlow medal by the Canadian Institute of Mlning and Metaliurgy for the best paper on geology, "Contact Metamorphism at Nickel Plate Mountain, Hedley, B. C."

¶ For VICTOR M. LOPEZ '36, awarded the Medal of Freedom with bronze palm "for exceptionally meritorious services in behalf of the Allied war effort."

¶ For VINCENT SALMON '38, recipient of the biennial award of the Acoustical Society of America.

¶ For EDWARD H. BULLERJAHN '43, awarded an honorary fellowship by the Scandinavian-American Foundation for a year's study in Stockholm.

¶ For GORDON M. LEE '44, first winner of the Browder J. Thompson Memorial Prize, administered by the Institute of Radio Engineers.

¶ For JOHN M. MURRAY, staff, awarded the Legion of Merit for outstanding psychiatric service in the Army Air Forces.

Guggenheim Fellowship Awards, 1946

¶ To CHAIM L. PEKERIS '29, as a mathematician, recently engaged in war work under contract by the Office of Scientific Research and Development.

¶ To JOSEPH B. BIRDSELL '31, as an anthropologist, recently a lieutenant in the Army, for a study of the processes and mechanics of the heredity of normal human characteristics. . . .

¶ To WAYNE E. HAZEN '36, as a physicist, who will make a study of cosmic rays at extremely high altitudes in unmanned balloon flights and at high altitudes in airplane flights.

¶ To SHUICHI KUSAKA '38, as a physicist, for work at the California Institute of Technology and at the Institute for Advanced Study, Princeton, N.J.

Technical Talk

¶ By C. FREDERICK JOY, JR., '08, GEORGE F. BROUSSEAU '26, and Norman Winch, before the sanitary section of the Boston Society of Civil Engineers on October 2: "Assessment and Connection Practices in Three Greater Boston Sewerage Systems."

¶ By CLYDE P. ROSS '14, before the eighth summer convention of the Mining Association of Montana at Missoula on August 31: "Completion of the Geological Map of Montana."

¶ By ROBERT V. KLEINSCHMIDT '18 and ALLEN LATHAM, JR., '30, before the Boston section of the American Society of Mechanical Engineers on October 17: "Compression Distillation."

¶ By F. ALEXANDER MAGOUN '18, before the Biennial Nursing Convention in Convention Hall, Atlantic City, N.J., on September 25: "New Ways in Personnel Administration."

¶ By CARROLL T. NEWTON '33, Colonel, U.S.A., before a joint meeting of the Society of American Military Engineers and the Louisiana Engineering Society at the St. Charles Hotel in New Orleans on August 14, about "Engineer Services of the United States Waterways Experiment Station"; and before a joint meeting of the Boston Society of Civil Engineers and the northeastern section of the American Society of Civil Engineers on student night, October 28, about "Engineering Services of the United States Waterways Experiment Station with Special Reference to the Mississippi Basin Model."

¶ By SAMUEL C. COLLINS, staff, before the Boston section of the American Society of Refrigerating Engineers on October 10: "Low Temperature Refrigeration and Some of Its Applications."

DEATHS

** Mentioned in class notes.*

¶ EDWARD G. TABER '77, February 19.*

¶ GEORGE E. CABOT '83, April 18.

¶ THOMAS W. FRY '85, August 31.

¶ JAMES OTIS '86, August 21, 1945.

¶ DWIGHT BALDWIN '87, May 9.

¶ HERBERT A. WILCOX '87, June 2.

¶ ALFRED HAMPTON '88, November 14, 1942.*

¶ HERMAN PARKER '89, April 3.*

¶ PHILLIPS P. BOURNE '92, August 26.*

¶ WILLIAM C. CAPRON '92, June 4.

¶ JOHN H. C. CHURCH '92, September 2.*

¶ FREDERICK N. DILLON '93, June 9.*

¶ ARIEL B. EDWARDS '93, January 8.*

¶ WINTHROP P. TENNEY '93, May 18.*

¶ WILLIAM H. SAYWARD, JR., '94, August 2.*

¶ EUGENE H. CLAPP '95, March 18.*

¶ JOSEPH W. CUSHING '95, April 14.*

¶ HENRY YOERG '95, September 4.

¶ GEORGE F. ASHTON '96, August 2.*

¶ ROSE L. DEXTER '96, September 17.

¶ EDGAR B. BAUMANN '97, March 15, 1945.*

¶ CHARLES B. CLARK '97, February 24.

¶ WILLIAM H. FOX '97, December, 1945.*

¶ WILLIAM A. KENT '97, March 27, 1945.*

¶ GEORGE A. MORAN '97, date unknown.*

¶ THOMAS F. LENNAN '99, September 10.

¶ FREDERICK W. MAGDEBURG '00, March 9.

¶ WILLIAM P. RAND '00, March 24.

¶ CHARLES H. STRATTON '00, August 9.

¶ HAROLD WESSON '01, August 29.

¶ GEORGE C. DANFORTH '03, June 30.*

¶ WALTER M. DRURY '03, July 16.*

¶ CHARLES B. RHODES '05, March 30.*

¶ THOMAS B. HOLMES '06, August 28.

¶ ROY A. SYKES '06, in 1945.

¶ STUART R. MILLER '07, May 20.*

¶ JOHN TETLOW '07, July 8.

¶ STARR TRUSCOTT '07, July 17.*

¶ HAROLD S. WILKINS '07, June 16.*

¶ ARTHUR E. BREMER '08, June 26.*

¶ HAL M. RADFORD '08, August.*

¶ JOSEPH H. SINCLAIR '08, May 24.*

¶ THOMAS A. ROPER '10, August 1.*

¶ HECTOR TABOSSI '10, June 15.

¶ JUNE ADKINSON '11, May 31, 1944.*

¶ LEE ETTING '11, March 13.*

¶ ALLEN H. KIMBALL '11, March 8.*

¶ GEORGE S. WATSON '11, July 31.*

¶ RAYMOND JARRET '12, November 9, 1945.*

¶ JOHN H. WHITE '12, July 30.

¶ ALAN H. MEANS '13, June 15.*

¶ ROYAL C. TAFT '13, July 18.*

¶ ARTHUR C. DORRANCE '14, September 21.

¶ WILLIAM H. WARREN '14, July 7.*

¶ I. PAUL MAIZLISH '19, September 4, 1945.

¶ RICHARD K. GIBSON, JR., '20, December 15, 1945.

¶ HOSEA H. SMITH '20, April 20.

¶ HOWARD R. HEALY '21, May, 1942.*

¶ JOHN T. HULL '21, March 16.*

¶ ALFRED J. LYON '21, December 1, 1942.*

¶ DAVID A. NEWCOMER '21, August 25, 1944.*

¶ FRED L. RAYMOND '21, December 15, 1944.*

¶ CARL W. STARCK '21, February 28, 1945.*

¶ MARY F. DE KRUIF '22, May 8.

¶ JOHN S. WYNNE '22, July 19.

¶ ERNEST R. HOSBACH '24, July 25.

¶ EARL R. THOENEN '24, January, 1945.

¶ WILLIAM H. ADAMS, JR., '25, June 28.

¶ MAX TARLOW '26, April 6, 1945.*

¶ HUGH B. CARTER, JR., '27, May 17.

¶ GEORGE S. GERST '27, May 19, 1943.*

¶ FREDERICK W. KEITH '27, April 29.

¶ JOSEPH L. MCCARTHY '27, December 15, 1944.*

¶ OSWALD V. KARAS '29, November 26, 1945.

¶ ALFRED F. STOCKWELL '32, June 24.

¶ GEORGE D. GIBSON '34, September 10, 1944.*

¶ FRANK C. PARKER, JR., '34, November 25, 1942.*

¶ WILLIAM K. DALTON '36, June 28.

¶ LINCOLN R. CLARK, JR., '37, December 15, 1945.*

¶ GEORGE T. BREITLING '37, December 15, 1944.*

¶ ROBERT F. HAGGERTY '37, December 15, 1944.*

¶ MAX S. KENDZUR '37, June 15, 1944.*

¶ CHARLES J. WESCHLER '37, January 16, 1945.*

¶ ELMER C. WIRTZ, JR., '37, in 1942.*

¶ FREDERICK R. EVANS '41, September 15.

¶ THEODORE M. WARDWELL, JR., '45, November 1, 1944.*

¶ CHARLES S. JOYCE, staff, July 5.

¶ ELIOT T. PUTNAM, staff, September 9.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Southeastern M.I.T. Association

The Association is happy to take this occasion to announce to Alumni throughout Alabama that on Thursday night, November 14, it will have as its guest James R. Killian, Jr.,'26, Vice-president of the Institute, at a dinner which will be held at the Mountain Brook Country Club in Birmingham at 6:30 P.M. It is expected that a number of Alumni residing in Alabama will attend. Appointed by R. C. Stobert'12, President, the committee active on arrangements consists of Merrill E. Pratt'16, chairman, F. C. Weiss'13, and William H. Hassinger, Jr., '27.

The Secretary feels inclined to resort to the vocabulary and manner of the inimitable announcer, Harry Ballou, in saying that "this will be the stellar event of the season, 15 rounds, or as many as will be required to reach any decision," that "all officials have been appointed by the proper commissions," and that "all worthy contenders have been more than qualified to perform their duties." To the prospective participants in this affair might be added the instructions of the referee himself, "Come out, shake hands, and have an enjoyable time." — GEORGE J. FERTIG'24, *Secretary*, Comer Building, Birmingham 3, Ala.

Montana Alumni Association of the M.I.T.

A dinner meeting of the Montana Alumni was held at the Hotel Finlen on June 25, to take advantage of the presence in Butte of Ralph T. Jope'28, Business Manager of The Review, Treasurer of the Alumni Association, and Secretary of the Alumni Council on Athletics. Mr. Jope had viewed the recent regatta on Lake Washington, near Seattle, and had attended a meeting of the Seattle Alumni. He arrived in Butte by plane and was leaving by plane on the following day. William L. Creden'90, chairman of the Association, presided, and dinner arrangements were made by the Secretary, Walter R. C. Russert'18. Special guests present were Francis A. Thomson, President of the Montana School of Mines, T. C. Murphy of Butte, Tom L. Greenfield of Butte, Lester F. Bishop of the Anaconda Copper Mining Company, and Allen Swift of Butte, President of the Associated Harvard Clubs of Montana. Other Alumni members who attended included E. McL. Tittmann'29, T. J. Murphy'28, Stuart Barker'27, F. C. Jaccard'07, F. C. Gilbert '98, and C. J. Trauerman'07.

Mr. Jope illustrated his talk with slides, and told how, as an emergency measure at M.I.T., the normal enrollment was being increased to 4,500. He said that M.I.T. had been receiving more than 4,000 inquiries a week from possible candidates for admission; that during the war the Institute had carried on a large amount of electrical and radar experimentation and research for the government; and that some of the temporary laboratories will continue to be used for a while as M.I.T. facilities. Mr. Jope also reviewed some of the plans for the future.

Mr. Creden presented Mr. Jope with a miniature set of miner's tools, consisting of pick, shovel, and double jack. These souvenirs, made by hand of heavy copper 30 years ago, are rare items today. In his presentation speech, Mr. Creden referred to them as "keys to Butte." The Association sent its kindest regards to President Compton, to Charles E Locke'96, Alumni Secretary, and to George A. Packard'90, club representative on the Alumni Council. On the following morning, Mr. Jope was taken underground in the Emma mine by Mr. Russert before leaving at noon on his plane for Milwaukee. — WALTER R. C. RUSSERT'18, *Secretary*, 912 West Porphyry Street, Butte, Mont.

The M.I.T. Club of the Kanawha Valley

The Club held a picnic and outdoor meeting in South Charleston, W. Va., on the evening of August 27. Under the direction of the President, Arthur H. Crowley'35, and the Vice-president, Eugene W. Hanszen'42, an able crew of "scroungers" rounded up a fine picnic supper, which the engineers cooked over outdoor fireplaces. The scroungers consisted of Roy M. Crawford'34, Carl S. Oldach'41, Paul J. Johnson'33, and Edward T. Cook, Jr., '40, who conjured up the food; and of Robert B. McBride'42, and Marshall C. Guthrie, Jr.,'39, who provided the usual liquid refreshment.

A new president and vice-president were elected in the persons of Holden M. Dougherty'22, and Michael J. Lach'36, respectively. In addition to those already mentioned, the following Alumni were present: Thomas W. Bartram'21, L. T. Bengtson'15, James M. Dunlap'33, Raymond E. Hahn'43, William L. Hawes'22, John H. Howell'35, Daniel G. Hulett'42, Ralph L. Kelley, Jr., '42, Irvin L. Murray'26, Arthur J. Power'42, Charles A. Wales'41, and Edgar W. Wise'42. — DANIEL G. HULETT'42, *Secretary*, 1595½ Quarrier Street, Charleston 1, W. Va.

Technology Club of Chicago

The Adventurers Club was the scene of the annual meeting and election of officers on the evening of June 25. This clubroom is fascinating and unique — its 20-foot, gleaming white walls hung with members' trophies from the far corners of the earth. The club has listed world adventurers of stature — Theodore Roosevelt, Admiral Byrd, and hosts of others — through the years.

An attendance of 104 Alumni listened intently to our guest speaker, Warren C. Johnson, chairman of the chemistry department of the University of Chicago and head of the chemistry division of the atomic bomb plant at Oak Ridge during the war. Bud Meissner'43 operated the projector for the slides illustrating Dr. Johnson's talk on nuclear energy and fission products. The 92 elements of our long-ago school days have been expanded to about 1,000 elements and their isotopes produced from fission: true tall tales of what neutrons on the loose can do with Einsteinic mathematical accuracy. Then, after the talk's conclusion came a question in calm, deliberative tone — "There's just one thing I didn't understand" — gleeful laughter drowning the rest of the question. This was classic. But as an example of a Tech man's insistence on technological accuracy, when Dr. Johnson mentioned that temperatures generated in a nuclear explosion were in the range of 10 to 100 million degrees — it was promptly questioned whether this was degrees Fahrenheit or Centigrade. Delightful.

Our nominating committee for the new officers comprised Louis H. G. Bouscaren '04, chairman, Sherry O'Brien'17, Frank O'Neil'25, and Ed Abbott'31. They did a grand job, resulting in the election of the following top-flight men who will guide our club destinies through 1946–1947: President, William Steinwedell'25, director of engineering for the Stewart Warner Corporation; Vice-president, Frank D. O'Neil'25, assistant to the President of the Western Foundry Company; Secretary, Sidney P. Griffin'20, design engineer for the Public Service Company of Northern Illinois; Treasurer, Robert W. Van Kirk, Jr., '18, of Penick and Ford, Ltd.; directors for three years, Robert E. Wilson'16, chairman of the board of the Standard Oil Company (Indiana); Pierre F. Lavedan'21, President of the Liquid Carbonic Corporation; and for his unexpired term, Edward Pennell Brooks'17, Vice-president of Sears, Roebuck and Company. — SIDNEY P. GRIFFIN'20, *Secretary*, Public Service Company, 72 West Adams Street, Chicago 3, Ill.

Technology Club of Southern Texas

James Rhyne Killian, Jr.,'26, Vice-president of the Institute, will address the Alumni of this section at a reception and dinner to be held in his honor at the Rice Hotel, beginning at 6:00 P.M. on the evening of Tuesday, November 12. Visiting Alumni and others who have not made reservations are requested to do so at once by telephoning F 9358 or writing Joseph A. Tennant'13, Gulf Building, Houston 2, Texas.

A part of the Hartwell Iron Works, Inc., of which Arthur E. Hartwell'09 is president, was destroyed by fire in August. Plans are drawn up for rebuilding the part destroyed, and the work will go forward as soon as building materials can be had. — JOSEPH H. MCEVOY, JR.,'21, *Secretary*, 202 McGowan Avenue, Houston 6, Texas.

M.I.T. Club of East Tennessee

The annual meeting was held in an upstairs dining room at the Farragut Hotel on Friday evening, April 19. Twelve members and guests assembled at 6:30 P.M. for dinner. After the meeting was called to order by President Holbrook '04, the secretary's report was read by Richard E. Hickman '36 in the absence of A. S. Peet '09, Secretary. The treasurer's report was submitted by Dana Wood '06. Both these reports were approved. It was moved and carried that the treasurer be authorized to transfer funds in the treasury collected for that purpose to the Theodore B. Parker Memorial Fund, Inc.

V. M. Hare '23 spoke briefly about his share in interviewing prospective students for the Institute. He was enthusiastic over the work, and his remarks were enjoyed by all. It was moved that a message be sent to Mr. Peet conveying to him the best wishes of the group, and saying that his presence was missed at the meeting. Mr. Hare gave the report of the nominating committee, as follows: for president, Richard E. Hickman '36; for vice-presidents, Albert G. Kern '34, I, Knoxville, and Richard S. Bicknell '10, X, Chattanooga; for treasurer, Dana M. Wood '06, I; for secretary, Albert S. Peet '09, II; and for executive committee, Howard P. Emerson '28, XIV. The above slate of officers for the ensuing year was unanimously elected.

President Holbrook then introduced Dean Moreland '07, who gave us a talk that will long be remembered. He spoke first about some present trends at the Institute, with special reference to postwar problems. He outlined some of the major wartime activities in which the Institute played a leading part. He then described to us at some length his experiences in the Pacific and in Japan, where he was head of a scientific mission assigned to the task of finding out what the Japanese scientists had done during the war. All present considered themselves fortunate to hear such authentic and firsthand reports of occurrences soon after MacArthur had entered that country. Mr. Hare then turned the meeting over to the new president, to be adjourned at 9:00 P.M. — ALBERT S. PEET '09, *Secretary*, Knoxville Glove Company, P. O. Box 138, Knoxville, Tenn.

Technology Club of Southern California

A dinner meeting was held at the Los Angeles University Club on June 18. The topic of the evening was "Professional and Technical Collective Bargaining." The guest speakers were R. C. Burt, President of the Engineers and Architects Association, and H. R. Beck, President of the aircraft chapter of the Engineers and Architects Association. President Pitkin '37 presided.

Dr. Burt sketched the history of the bargaining agency to which he belongs, stressing its professional attitude. He carefully pointed out that the term "union" was not to be used in connection with the association. Mr. Beck extended Dr. Burt's remarks with a talk on the procedures followed in presenting to engineering management the idea of collective bargaining for professional and technical men. Specific mention was made of accomplishments of the association at Lockheed Aircraft Corporation and at Consolidated-Vultee Aircraft Corporation.

H. E. Beebe '10 of the directory committee announced that there had been a 50 per cent response to the information cards mailed to members. He urged those present to forward necessary information to the Club Secretary immediately. Robert Alder '37 took charge of roll call and collections in the absence of the secretary-treasurer. Forty-one members and guests were present, including the following Alumni: R. L. Alder '37, D. E. Batchelder '28, H. E. Beebe '10, E. R. Chilcott '21, F. A. Clauson '43, C. B. Cole '41, G. L. Davenport, Jr., '06, S. G. Eskin '26, R. G. Fife '40, Page Golsan '12, Page Golsan, Jr., '34, T. G. Gundelach '43, W. P. Hand '24, R. W. Hunn, Jr., '28, G. A. Joslin '09, H. W. Kohl '37, W. H. Lazear '23, J. G. McLeod, Jr., '20, M. A. McClure '22, C. L. Maltby '22, Priscilla Bunker Maury '35, B. W. Messer '31, W. J. Moody '30, J. B. Pitkin '37, H. Y. Satterlee '23, R. B. Small '42, O. K. Smith '40, W. L. Smith '23, Marjorie Stowell '43, Anthony Thormin '27, F. L. von Brecht '27, W. C. Wold '37, D. O. Wood '37, W. L. Woollett '94. — D. DONALD WEIR '38, *Secretary*, 1492 North Doheny Drive, Hollywood 46, Calif.

M.I.T. Club of South Florida

Under the vigorous leadership of Thomas Phillips Coogan '24, newly elected President of the Club, members are looking forward to the most interesting series of meetings since before the war. Many of the warborn difficulties which made the job of our Past President, Edward Mandell '21, so arduous are slowly evaporating, and it is reported that President Coogan is dusting off his polyphase slide rule so that the meetings this winter will have that Technology flair.

Professors at the Institute are cordially invited to communicate with the Secretary if they contemplate a trip to South Florida this winter, for it is expected that numerous advantages will accrue from such notice.

F. S. Anderson '04, and Stanley Hooker '97, with Mrs. Anderson and Mrs. Hooker, entertained at the final meeting last season, held at Captain Anderson's beautiful and famous water-front estate in Fort Lauderdale. A list of Alumni who attended, bringing 18 wives and daughters, follows: Frederick S. Anderson '04, Fletcher H. Burke '05, Paul W. Comstock '39, Thomas P. Coogan '24, Henry G. Dooley '20, Harry Gamble '26, George G. Greene '95, Stanley A. Hooker '97, James L. Kimball '85, Morris N. Lipp '20, Edward I. Mandell '21, Richard L. O'Donovan '27, John J. Ostlund '35, David D. Peene '29, Irving Peskoe '39, G. Edward Sakrison '29, Clarence P. Thayer '23, Harry L. Weinstein '26, Donald S. Whitmore '45, and Fred E. Zurwell '20. — CLARENCE P. THAYER '23, *Secretary*, 4212 Northwest Six Avenue, Miami, Fla.

Technology Club of New York

It is good to be back at work again with another summer under our belts, devising ways and means for us to continue our good fellowship here in the Club.

The board of governors met on the 20th of September and discussed many things of vital importance to each of you. One thing, which I know has annoyed many, is the lack of facilities for handling overnight guests at the Club. This is a situation which exists and is beyond our control, for the present. Membership in the Williams Club has grown rapidly, and the Williams Alumni are using their club more than at any time in their history. Consequently, although in the past we have been on an equal footing when it came to obtaining rooms there, we are now considerably outnumbered. So please be patient and go easy on club officers and friends when you suddenly find that no facilities are available at the time you want them. We are working and planning as hard as we can to correct the situation, one way or another, and ask your indulgence until something is accomplished. We need your support to the limit.

Our membership, as of September 20, stood at 427. Since then we have added another dozen or so, and our resignation list was unusually small during the second half of the year. The above is made up of 233 resident, 178 nonresident, two honorary, one special, and 13 life members. We could use twice that many, which should be no great problem, when you realize that there are some 4,000-odd Alumni in the Greater New York area. Your membership committee under Sam Reynolds '22 is doing a magnificent job in rooting out new members, but we need more help. If each of the above members would get just one new member during the coming year, we should be in a nice position to offer our membership a real setup in the way of club facilities. Drop any of the officers a note, and they will supply you with the necessary application blanks. In fact, our membership team might consider putting on their act for you, if called upon at the right time.

Since our last report on new members, it is gratifying to note that we have a high percentage of new members from the recent classes. We hanker for more of these, since it is they who will perpetuate the Club in the years to come. We are happy to report the election of the following to membership in the club: Cortlandt F. Ames '45, Jack Frost Andrews '33, H. L. Christison '38, Rafael R. Feuerring '43, A. M. Holcombe '04, George H. Hotte '43, Donald Paul Kahn '45, Francis N. Kurriss '46, Richard A. Markey, Jr., '41, Thomas S. Markey '45 (page the brothers); Donald A. Ostrower '45, and Joseph Tankoos '43. Unfortunately, three members found it necessary to submit their resignations, Larry Hitchcock '20, Henry Hubbell '06, and J. L. Seligman '34. We accept them with regrets and hope that conditions will make it possible for them to rejoin us and fully utilize the Club in the not too distant future. Among the visiting firemen have been W. H. Callahan '26, W. E. R. Covell '23, J. R. Bonnar '27, C. H. Shaw '10, N. L. Fournier '28, and C. E. Patch '02.

In the near future, plans will be announced for our midwinter meeting. On this occasion last year, more than 600 Alumni turned out to celebrate Dr. Compton's 15th year at the Institute. — WILLIAM W. QUARLES '24, *Secretary*, McGraw-Hill Publishing Company, 330 West 42d Street, New York 18, N. Y.

Niagara Falls Technology Club

At the usual Christmas meeting the annual election was held despite the festivity of the occasion. The new officers elected were J. B. Neal '15, President, and A. W. Hosig '23, Secretary-Treasurer. Because of confused conditions, busy Alumni, and the difficulty of finding suitable places to congregate, club meetings have been infrequent during the last few years. Although at the minute the situation does not look much brighter, the Club has hopes of soon re-establishing its old alumni contacts and activities. — ANTON W. HOSIG '23, *Secretary*, 1623 Linwood Avenue, Niagara Falls, N.Y.

Technology Club of Philadelphia

The officers, executive committee, and members of the placement committee of this Club held their summer meeting on July 20, as the guests of Herbert W. Anderson '15, President, at his "Winding Brook Farm" in Prospectville, Pa. The following were present at the business meeting held on the lawn in the afternoon: H. W. Anderson '15, E. A. Whiting '15, O. B. Pyle, Jr., '16, C. W. Stose '22, H. S. Dimmick '22, E. J. Healy '23, E. S. Petze '28, R. M. Harbeck '28, G. T. Logan '29, F. S. Chaplin '32, B. A. Kleinhofer '39, and S. K. McCauley '41. The purpose of the meeting was to review the activities of the Club and make plans for the coming year.

Chairman Healy gave a report on the accomplishments of the placement, planning and guidance committee. Of the 45 men who have approached the committee, 25 have been satisfactorily placed, and all have been interviewed by Mr. Healy. Many have also been interviewed by one or more of the other members of the committee, and many appointments have been arranged with interested employers. In soi e cases, through the efforts of the committee, it was possible for Alumni to come from out of town and to keep several appointments in the course of a one- or two-day visit. Mr. Healy urges any Alumni who are moving to, or would like to locate in, this area to write to him at the Philadelphia Brewing Company, Philadelphia, for further information on the employment possibilities here. He also asks the Alumni in this district to keep him informed of any openings which can be filled by Tech men.

Your Secretary reported that our membership is now 266, an increase in the last year of 82 members. This is still a small percentage, however, of the 1,200 Alumni in this area who could gain both pleasure and profit from the opportunity that the Club offers for association with their fellows.

The meetings for the coming year were discussed, and suggestions for their improvement and for obtaining interesting speakers were made. It was agreed that Alumni coming to the meetings for the first time missed something because of lack of acquaintance with the members. In order to remedy this, it was decided to form a reception committee, whose job would be to greet such men and introduce them to a few of the members with whom they have something in common. Mr. Anderson appointed Mr. Kleinhofer chairman of this committee.

Since this step completed the business and a quick thundershower had come up, the meeting was hastily adjourned to the porch, where most of the wives had assembled. After cocktails and an inspection of the charming old house, a buffet supper was served by Mrs. Anderson in place of the picnic supper that had been planned. The evening was enjoyably spent in informal conversation.

By the time that this reaches you, the fall meeting on October 15 will be but a pleasant memory. But don't forget that, as usual, we also have meetings on the third Tuesday of January and May. For January, always an important meeting, a particularly good program is being planned; so be sure to put an *X* on your new calendar at the 21st of January and watch this column for announcement of the details.

The scholarship committee, under the guidance of Greville Haslam '15, was very active this spring and interviewed a considerable number of candidates for the regional scholarship to M.I.T. The candidate selected by the committee, however, was subsequently affiliated with the Coast Guard Academy. Freshmen Competitives were awarded by the Institute to some of the outstanding regional candidates — among them, Guy C. Bell, Jr., of 904 Drexel Avenue, Drexel Hill, and William L. Kenly of 144 Radnor Street, Bryn Mawr. Our Club wishes success in his studies to Philip M. Alden, Jr., whose father, Phil Alden '22, is a past president and long-time supporter of the Club. — ROBERT M. HARBECK '28, *Secretary*, 605 Foss Avenue, Drexel Hill, Pa. *Assistant Secretaries:* SAMUEL K. MCCAULEY '41, 288 Copley Road, Upper Darby, Pa.; FRANK S. CHAPLIN '32, 822 Glendalough Road, Philadelphia 18, Pa.

M.I.T. Club of Western Pennsylvania

The fifth meeting of the Club for the year 1945–1946 was held on May 20 at the University Club in Pittsburgh. Because of the number of new members present, the reading of the Secretary's minutes for the previous meeting was preceded by having each of those in attendance introduce himself, giving his name, course, class, and present business connection.

This occasion being the annual meeting of the year for the election of officers and transaction of other business, the Treasurer, E. M. Barnes '23, reported on the financial condition of the Club. His statement showed an excess of receipts over disbursements for the year with a corresponding satisfactory improvement in the cash balance. Thomas Spooner '09, chairman of the scholarship committee, summarized its activities during the past year. Few of those present had previously realized the extent and valuable nature of the work done by this committee. H. H. Hall '14, chairman of the entertainment committee, outlined the arrangements made for the banquet to be held on June 13 at which Dr. Compton would be the guest of honor. He asked for co-operation in approaching by telephone those club members who had not replied to the notices sent out, so that as many as possible would attend.

Mr. Hall, as chairman of the nominating committee for this year, announced the following nominations for the year 1946–1947 as prescribed by the new constitution: for president, R. G. Lafean '19; and for the board of governors (for three years), Thomas Spooner '09, E. M. Barnes '23, and S. C. Johnson '39. The motion was made and carried that the Secretary be instructed to cast a unanimous vote for the nominees.

Mr. Lafean then introduced Ray C. Cochran, who spoke on the timely subject of "Some Economic and Political Problems of the Future." Mr. Cochran's discourse was an eloquent and able presentation of the need for an organization which at all levels — local, sectional, and national — would be a driving force for the public good, free of group interests and pressures.

The following were present: W. U. C. Baton '04, H. L. Lang '09, Thomas Spooner '09, H. H. Hall '14, R. G. Lafean '19, T. W. Bossert '20, E. M. Barnes '23, G. N. Reed '23, F. W. Waterman, Jr., '25, T. J. Eaton '26, M. M. Greer '26, J. P. Larkin '26, H. A. Sargent '26, R. D. Hoak '28, B. M. Hutchins '32, H. L. Johnson '32, I. E. Madsen '33, P. R. Toolin '39, S. C. Johnson '39, Irving Koss '41, and J. C. Brandon, Jr., '42. — WILLIAM J. BATES '35, *Secretary*, 141 Wood Haven Drive, Pittsburgh 16, Pa.

Technology Club of Puget Sound

The Club had the pleasure of being host for the M.I.T. Crew on Thursday evening, June 20. The evening meeting was held at the home of H. W. McCurdy '22 on the shores of Lake Washington, only a short distance from where, on Saturday afternoon, the crew came in a good second in the annual invitational race.

According to the caterer, 82 meals were served. This, however, does not mean that 82 were present. It is not definitely known whether it was the quality of the steaks or the fact that the boys were building up energy for the coming race; however, the net result was that most of the crew ate three dinners apiece. Dinner was served in buffet style, with each man carrying his own tray and finding a comfortable seat looking out across Lake Washington into the evening sunset. Afterward, we had brief talks by Ralph T. Jope '28, Secretary of the Advisory Council on Athletics, Jim McMillin, the crew coach, Bob Moch, and H. W. McCurdy, who welcomed the crew to Seattle and to his home.

In addition to the crew and other guests from Technology, those present at the dinner included the following Alumni: G. J. Ackerman '28, J. D. Alexander '39, Baldwin Anciaux '35, M. P. Anderson '10, W. G. Atkinson, Jr., '45, J. W. Barton '39, E. F. Brady '41, J. M. Buswell '31, E. S. Campbell '26, F. L. Carroll '45, H. A. Carter '42, W. H. Cook '38, C. M. Culp '01, Joseph Daniels '05, E. A. Eve, Jr., '41, E. R. Fish, Jr., '39, Herbert Fryer '11, C. E. Hamilton '06, E. P. Holland '42, H. H. Houston '24, C. P. Jensen '46, P. S. Johnson '22, C. E. Lasher '06, R. L. Loesch, Jr., '39, H. W. McCurdy '22, W. R. Mason '41, W. S. Matheson '99, J. I. Metcalf '24, K. A. Moores '21, H. K. Moritz '21, C. F. Myers '28, F. A. Naramore '07, G. M. Nauman '23, J. W. Pratt '23, T. McK. Rowlands '26, N. M. Rosenberg '40, E. W. Rudow

'21, H. G. Schwarz '33, H. R. Seykota '39, P. P. Sloss '42, T. P. Snow '39, J. E. Steiner '41, N. E. Tourtellotte '17, J. A. Troxell '34, H. H. Whithed '11, R. E. Winslow '40, H. W. Withington '39, H. M. Woodward '39. — JACOB A. SAMUELSON '40, *Secretary*, 3617 Lakewood Street, Seattle, Wash.

Technology Club of Shanghai

Early meetings of the Club in its postwar phase, held in the fall of 1945, were reported in The Review for January and March, 1946. A series of gatherings successfully continued the program through the season of 1946. The very full accounts submitted can only be summarized here.

On the afternoon of January 31, in the library of the American Club at 209 Foochow Road, 36 Alumni fixed on the last Thursday of each month at 4:30 P.M. as the regular time for meetings. Dues and charges were decided. Arrangements were made for a group visit to the Kiangwan airport on February 9. K. T. Lee '19 reported on a meeting of the directors of the Chinese Institute of Industrial Training held on January 24 at the French Club — in effect that a suitable piece of land had already been found on the outskirts of Shanghai, and that a plan for the buildings and equipment was being drawn up, together with a list of the required equipment to be used as a basis for solicitation of laboratory fittings and instruments to be contributed by M.I.T. and American manufacturers. Colonel Seedlock '40 also announced that he had made overtures to the United Nations Relief and Rehabilitation Administration for assistance. A bundle of American magazines, including a set of The Review for 1945, was displayed. Contributed by the Institute and forwarded by T. F. Walkowicz '41 on his return there, these magazines are in the hands of the assistant secretary and treasurer and may be borrowed, as available, by any member.

The *pièce de résistance* was a 40-minute talk by K. R. MacKinnon, Vice-president of the Ebasco International Corporation, affiliate of the Shanghai Power Company. His subject, "Electric Utilities and the War," covered the war effort by electric utilities in the U.S.A., where there was no shortage of electric supply and power was never rationed. He believed that several well-planned steam plants strategically located would better promote industrial development than one or two monumental hydro developments, built merely for the sake of engineering achievement.

On February 28, at the American Club at 4:30 P.M., about 36 members and guests were present. A letter from Professor Locke '96 was read. A committee of five was appointed to handle arrangements for the joint Harvard-M.I.T. meeting in the spring, which it was decided to make a social affair including the ladies. A letter of condolence was agreed upon, expressing sympathy to T. F. Wei '20 for his mother's passing. The time for regular meetings was changed from 4:30 to 5:00 P.M., as more convenient. Another meeting of the directors of the C.I.I.T. was called to follow the club meeting. Colonel George E. Armstrong, United States Army surgeon in the China theater, then spoke on "The Medical Advance in World War II," showing how the number of fatalities from disease and wounds was greatly reduced by making medical attention immediately available, and how epidemics were forestalled or controlled by disinfectants and insecticides. Further advances consisted of the treatment of psychiatric cases and the creation of rehabilitation centers for convalescents.

On March 28 in the American Club at 5:00 P.M. was held one of the most lively and best attended meetings of the Club. The speakers for the occasion were M. K. Arnold of the National City Bank and E. Kann, economist, who dealt with the position of China's foreign exchange. Many bankers and other notable outside guests were drawn by the timely nature of this subject, although the information given was strictly off the record.

More than 200 alumni of Harvard and Technology thoroughly enjoyed themselves at the joint garden party on Sunday, May 5. The committees had accepted the offer by C. S. Tung of his lovely residence as the setting, and the clubs were deeply grateful to the Tungs for use of so charming a spot. Inside the mansion, southern Californian in style, guests were entertained by a delightful musical program, and by jazz provided for dancing. Out on the velvety lawn, surrounded by glorious evergreens, others grouped themselves in conversation, ran three-legged races, and sipped their tea in the fragrance of the camphor trees, which were in full bloom.

Among many eminent alumni and friends, John Leighton Stuart, President of Harvard-Yenching Institute, and H. C. Zen, director of the China Foundation for the Promotion of Education and Culture, were the guests of honor. The President of our Club, Colonel Seedlock, speaking briefly, considered the meeting symbolic of cooperation between technical men and executives and administrators, through which alone the economic development and expansion of China may come about. It is as a practical step toward this end that the Club sponsors the China Institute for Industrial Training of the foremen and supervisors so urgently needed and so lacking in numbers. This institute, now being revived after the war, deserves the unqualified support of all. — JI-DAH WOO '38, *Secretary*, Room 142 Hong Kong and Shanghai Bank Building, 12 the Bund, Shanghai, China.

M. I. T. Club of the Connecticut Valley

The Club met on June 19 at Tinti's Restaurant in West Springfield for their second dinner meeting of the current season and the annual election of officers. The following officers were presented by the nominating committee and were unanimously elected by the members present: President, Donald L. Ross '27; Vice-president, Albert D. King '32; Treasurer, Irving H. Small '28; and Secretary, Minot R. Edwards '32.

A constitution was adopted as presented by a committee headed by Otto Kohler '31. This document changed the name of the Club from Technology Club of the Connecticut Valley to M.I.T. Club of the Connecticut Valley, as being more accurate and more easily identified by the general public. It followed the standard Alumni Association constitution for local clubs but was altered in a few places where this was not satisfactory to the committee. It was voted to assess each member $1.00 in annual dues to cover mailing and other administrative expenses and to allow any member to contribute an additional dollar voluntarily for the extra expenses of the sick committee or for entertainment and other extras. The executive committee which served for the past three years was continued in office for the next year, and at next year's election the new committee will be chosen according to the terms of the new constitution.

The 29 members of the Club who attended the meeting were entertained with two reels of film shown by Ralph E. Curtis '15. One was on dinghy racing at M.I.T.; the other, on Technology activities and buildings up to the beginning of the war; and both were loaned by the Institute. The following members attended: Leo E. Beaulieu '19, Basil G. Constantine '26, Ralph E. Curtis '15, Herbert H. Dakin '99, Willard A. Emery '21, Wendell K. Fitch '36, Burton E. Geckler '05, Thomas W. Hafer '35, Leslie G. Haines '35, William J. Harris '30, Henry D. Johnston '27, Albert D. King '32, Otto C. Kohler '31, Theodore O. J. Kresser '34, Theodore F. Lange '01, Albert M. Lovenberg '16, Vincent P. Mango '31, Allen Q. Mowatt '35, Mortimer H. Nickerson '37, Howard G. Noble '86, Daniel J. O'Connell '29, Alfred G. Payne '33, Donald L. Ross '27, Irving H. Small '28, Maurice D. Triouleyre '32, Peter G. Volanakis '42, Robert W. Vose '31, John E. Walker '26. — MINOT R. EDWARDS '22, *Secretary*, Holyoke Heater Corporation, 54 Waltham Avenue, Springfield 9, Mass.

M.I.T. Club of Central New York

The Club is renewing its activity. Its first postwar meeting was held in Syracuse in July, with 19 Alumni attending. An election was held at which J. F. Owens, Jr., '40 was elected vice-president and D. E. MacLeod '38, secretary-treasurer. At that time it was planned to have about six meetings a year, preferably dinner meetings, followed by some form of entertainment. — D. EARLE MACLEOD '38, *Secretary*, 326 Hickok Avenue, Syracuse 6, N.Y.

Washington Society of the M.I.T.

The Society met at a new place on the 23d of May. The Kendall House, 613 E Street, Northwest, had a dining room that we found very comfortable — in fact the meeting there was merrier than we have had for a long time.

After the "Sons of M.I.T." and dinner, Bill MacMahon '22 got the railroad working. It was the night of the strike on most of the roads, but there was nothing wrong with our rolling stock and crews: we got a slate of officers into their new jobs in approximately 30 seconds. It was done on a single vote by the Secretary after he had been authorized to cast the ballot by unanimous consent. Here are the new officers: President, William C. Mehaffey '17; First Vice-president, Harry H. Fisk '22; Second Vice-president, John Nolen, Jr., '20; Secretary, Charles W. Maskell '30; Assistant Secretary, Nicholas P. Stathis '29; Review Secretary, Albert F. Bird '30; Treasurer, Frederick M. Moss '32; Assistant Treasurer,

Aubrey D. Beidelman '15; members of executive committee, William K. MacMahon '22, Frank W. Milliken '04, Albert E. Beitzell '38, and George D. Mock '28. Once elected, Bill Mehaffey '17 assumed charge. His first task, a pleasant one, is the details of the picnic we plan to hold at Waterford, Va., late in June.

Next, our own member, Bob Thulman '22, was presented. He talked to us in his inimitable gay fashion about his experiences in England, where he was the guest of the country, or at least of certain heating people there, for a period of eight weeks last winter. Bob is a funny fellow, and his humor sparkled all through the talk from his tale of the transatlantic plane's being held at Gander while he got a quart of Scotch from a friend, to his report of how, after a trip to Switzerland, the authorities wouldn't let him back into England. Bob traveled the length and breadth of England and into Scotland preaching that the way to make the coal go farther was to cut out the open fire as a primary source of heat. This 20 per cent method of burning coal merely gives you a fire to look at but does not keep you warm. He recommended the central heating systems that we have in most homes in this country, using modern practice as we know it to get more efficiency out of the coal. He pointed out to them that they could increase their efficiency to 65 per cent if they would install central heating. If you go to England in years to come and are warm enough in the winter, some of the credit should go to Bob.

Present were the following: 1890: J. G. Crane; 1893: G. W. Stose; 1897: F. A. Hunnewell; 1903: W. L. Cook; 1904: F. W. Milliken, G. N. Wheat; 1905: O. C. Merrill; 1909: B. A. Robinson; 1915: A. D. Beidelman; 1916: W. H. Blank, F. P. Upton, W. E. Wentworth; 1917: W. C. Mehaffey; 1919: L. J. Grayson, E. M. Kenison; 1920: W. M. B. Freeman; 1921: Richard McKay, L. W. Conant; 1922: H. H. Fisk, W. K. MacMahon, J. R. Morton, Jr., R. K. Thulman; 1924: W. V. Cash; 1927: E. G. Cowen; 1928: A. E. Beitzell; 1929: J. A. Plugge, N. P. Stathis; 1930: A. F. Bird, C. W. Maskell, N. C. Nelson; 1932: F. M. Moss; 1933: Elsa Gardner, J. F. Longley; 1943: J. F. Hoey, Jr. — CHARLES W. MASKELL '30, *Secretary*, 4807 Bayard Boulevard, Washington 16, D.C. Albert F. Bird '30, Review Secretary, 5070 Temple Hills Road, Southeast, Washington 20, D.C.

Worcester County Alumni Association

At a dinner at the Tatnuck Country Club on May 28, the guest of honor was the President of Technology. Accompanied by Mrs. Compton and Professor Locke '96, Dr. Compton was introduced by Orville B. Denison '11, Past President of the Association, now succeeded by W. Franklin Baxter, Jr., '34. Elected for 1946–1947 with Mr. Baxter, on the slate presented by Ernest P. Whitehead '20, dinner and nominations chairman, were the following: Arthur J. Larivière '34, Vice-President; Robert G. Clarke '35, Secretary; Arthur E. Jorjorian '31, Assistant Secretary; and Robert N. C. Hessel '27, Treasurer; executive committee, Robert T. Dawes '26 of Hudson, Frederick E. Mader '32 of Shrewsbury, John S. Middleton '29 of Southbridge, Mac Levine '25, and Orville B. Denison '11. Mr. Middleton was also named chairman of the placement committee, succeeding William A. Wilder '98, who had served in this post through the war. Assisting Mr. Whitehead on dinner arrangements were Howard F. Atwood '32 of Bolton, Carl H. Wilson '34 of Southbridge, Robert H. Brown '22 of Leominster, with Hessel, Larivière and Mader. Brown was in charge of a radio broadcast parody that opened the after-dinner program.

The gist of Dr. Compton's message was that it would take the United States 12 years to recover fully from the war shortage of industrial and educational scientists. "There is greater demand than ever," he said, "for technically trained personnel as a result of wartime recognition of science's place in the modern world — and there is a definite deficit, an acute shortage, accumulated during the war years, in just this class of individual. The number of professionally trained physicists," he added, "will perhaps catch up with the 1940 level by 1958 — and chemists and engineers by 1955." In spite of this situation, he reported that it was impossible to accommodate all present applicants for technical training. Four thousand letters on admission were being received weekly at the Institute. Out of each 100 of the most insistent, 10 were completely qualified for acceptance, but only one could be taken. He described such additions projected as a new dormitory, automotive, machine tool and hydraulics laboratories, library and gymnasium.

Alumni attending this meeting, for the most part with their wives, plus occasional sons and daughters, to a total of 82, were as follows: C. E. Allen '07, A. G. Anderson '30, H. F. Atwood '32, F. E. Banfield, Jr., '07, W. F. Baxter '34, R. L. Bent '19, H. O. Berry '22, A. J. Brockelman '26, Robert Brown '22, G. W. Browne '29, A. K. S. Burrows '32, O. M. Burrows '31, R. G. Clarke '35, W. S. Crowell '32, F. H. Daniels '11, O. B. Denison '11, Francis Donoghue '32, H. R. Gordon '38, S. H. Hartshorn '11, C. A. Harvey '31, A. E. Jorjorian '31, T. P. Kelly '18, H. S. Kendall '04, A. J. Larivière '35, H. M. Latham '93, Mac Levine '25, C. E Locke '96, Philip Loew '26, F. E. Mader '32, G. D. Manter '31, J. S. Middleton '29, Myles Morgan '23, Harold McCrensky '35, Charles Rich '26, F. H. Riegel '25, A. B. Sherman '06, R. R. Smith '27, J. A. Swift '27, E. A. Teeson '15, E. P. Whitehead '20, C. H. Wilson '34. — ROBERT G. CLARKE '35, *Secretary*, 17 Park Villa Avenue, Worcester, Mass.

CLASS NOTES

1877

Edward Gray Taber, who died in Spokane on February 19, was born in Freetown, Mass., on July 14, 1855, the son of Marcus William and Olive Collins (Ashley) Taber. He was a descendant of Philip Taber, an Englishman from Essex, England, who landed at Plymouth, Mass., in 1630. His father, Marcus William Taber, was a sea captain who went to sea at the age of 17 and followed the sea until his retirement in 1859. Most of his voyages were whaling, and trips to the Orient. Mr. Taber's family moved to New Bedford, Mass., soon after his birth, and it was here that he received his early education leading to graduation from high school in 1873. He entered Technology in 1873 and completed a three-year course in 1877. His attendance had been somewhat interrupted by sickness. He was not well when he left the Institute and spent the next three years regaining his health.

By 1880, he was in good condition and entered the employ of the Northern Pacific Railway as rodman. He was soon promoted to the position of assistant engineer and followed the progress of this railway on location and construction as far west as Spokane, Wash., arriving there in 1886. A considerable portion of this time he spent in Montana. From 1886 to 1905, he was employed on location, construction, and maintenance of portions of the Union Pacific, Northern Pacific, Great Northern, and other railways in the Northwest. From 1905 to 1941, he was chief engineer of the Spokane-International Railway, from Spokane to a connection with the Canadian Pacific Railway at the international boundary. On June 30, 1941, he retired from active work.

Taber was married twice; first, in 1893, to Mrs. Marie Christine Bowen, who died in 1923. His second marriage, in 1927, was to Mrs. Anna Brown, who died in 1936. He had no children of his own, but through his marriages, he had a number of stepchildren. He established a splendid home in Spokane in 1911, where an interesting feature was his garden. He spent a good portion of his life out of doors and was a great lover of Nature. During his boyhood and early manhood, in New Bedford, his outdoor sports were boating and hunting. He never lost his love for Nature. He hunted buffalo in Montana and during his younger days in the West always kept a fancy saddle horse. He was an authority on birds and bird life. One of his greatest pleasures was his flower garden at his Spokane home. This was of such beauty that it was well-known far and wide in that locality.

In 1914, Taber was elected to membership in the American Society of Civil Engineers, of which he was a director from 1926 to 1928. He was a member of the Associated Engineers of Spokane. At the time of his death he was, both in age and time of residence, the oldest engineer in Spokane. He was of a quiet disposition, a man of great integrity and exemplary life. Through his long residence in Spokane he acquired many friends and held a position of great respect among engineers and others with whom he came in contact. Your Secretary saw him in New York in 1927, when he attended, as a director, the annual meeting of the A.S.C.E. He then had the quiet, unassuming, but cordial manner that he had had at Tech. The last letter from him was written from Spokane on January 3, 1945, when he was in his 90th year. It was a friendly letter, written in response to an invitation to join the members of our Class at its 68th reunion. Among other things he said: "I am getting along comfortably. I have no aches and pains worth mentioning, but I have had to cut down on my walks and to give up gardening. I send you, and the other members of

our Class, my best wishes." Mr. Oscar S. Bowen, of Wenatchee, Wash., a connection of Taber's by marriage, has kindly furnished much of the above information in regard to Taber's professional and family life.

Our Class held its 69th reunion at the Hotel Statler on June 8. Of our five living members, Beeching was the only one to accept your Secretary's invitation to lunch with him then and there. — GEORGE W. KITTREDGE, *Secretary*, 592 North Broadway, Yonkers 3, N.Y.

1885

Eleazer B. Homer was an Institute graduate, and a lecturer and associate professor in Architecture, before going to the School of Design in Providence, R.I. He was chairman of the City Planning Commission there from 1915 to 1918 and was appointed to the Board of Review in 1926. He died in 1929. His son, Arthur B. Homer, a Brown graduate, has lately been elected head of the Bethlehem Steel Company. — ARTHUR K. HUNT, *Secretary*, Longwood Towers, Brookline 46, Mass.

1888

We have somewhat belatedly secured material on the life of Alfred Hampton, who died on November 14, 1942, in Gilroy, Calif. He was born in Columbia, S.C., in 1861. His love of adventure was early manifest in the many schools he attended in the South, always driven on by restlessness and a capacity for mischief to new fields for conquest. He studied, however, the hardest courses he could find in Latin, Greek, philosophy, and higher mathematics, and spent his college years with us in Civil Engineering — a fine looking fellow, though not well known by your Secretary.

He went westward to El Paso and then into Mexico, where he became surveyor for the Mexican government and traveled over the entire republic, having experiences in the wilder sections of this country and that that would make good adventure stories. In the last war he was director general of internment and since then had been with the United States Immigration Service until he retired in Salt Lake City, his last station. He and Mrs. Hampton, who survives him, then went to San Francisco to be near their daugher, Mary McDuffie Hampton, former staff writer of the San Francisco *Chronicle* and subsequently publisher of her own syndicated fashion column. Finding the people and climate congenial, they settled in Gilroy, Calif., where Hampton divided his time between friends, golf, and garden. Only two years before his death and at the age of 80, he won a silver trophy at the Del Monte amateur handicap tournament. He tended his garden up to the last day. He had had both eyes successfully operated on, only to die rather suddenly of a heart attack. He was the last of the male line of General Wade Hampton, statesman and reconstruction governor, who was chosen, with John C. Calhoun, to represent South Carolina in the national hall of fame. — BERTRAND R. T. COLLINS, *Secretary*, 291 Nassau Street, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

1889

L. E. Johnson's address is now 173 Macon Avenue, Asheville, N.C. Herman Parker died on April 3 at his home in Redstone Lane, Marblehead, Mass. The Secretary has no particulars. Parker Fiske has contracted with the Vapoo Products Company of 103 East 125th Street, New York City, for the manufacture and distribution of the products of his business. Parker, as you all know, is the originator of the slogan, "Life Begins at 73." Everyone recognizes the fact that in anyone's life the first hundred years are the hardest, but Parker has beaten even that hoary maxim. The Secretary is wondering what he will take up next.

Welles Bosworth is chairman of a committee which is raising a fund to help rebuild the town of Vimoutiers, France, destroyed in 15 minutes by American aviators as a war necessity. His address is 14, Place Vendome, Paris. Aside from the desire to aid an unfortunate ally, as a motive for restoration — Vimoutiers was the home of the famous Camembert cheese, a fact which alone entitles it to respect.

The Secretary has been chairman of a committee of Boston architects which has placed a bronze memorial tablet on the birthplace of Louis Henry Sullivan at 42 Bennett Street, Boston. Sullivan's lifework was in Chicago, but he became world-famous as a teacher and prophet of modernism in architecture. His first architectural training was at M.I.T. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston 16, Mass.

1891

Our 55th Victory Reunion was held at the New Ocean House in Swampscott, Mass., from June 7 to June 9. There were 25 members present, including our honorary member, Harry Clifford '86, as follows: Barnes, Bradlee, Brown, Bunker, Clark, Cole, Damon, Dana, Douglass, Earl, Fiske, Hatch, Holmes, Howard, Mansfield, Marquand, Moore, A. W. Pierce, Read, Spooner, Tappan, Wilder, Wilson, Young. Only a brief outline of events will be noted here, as a reunion booklet is being printed to give the story, which you will receive shortly.

After dinner on Friday night, Frank Howard and Gorham Dana showed motion pictures of previous reunions and of Frank's trip to Bryce Canyon in 1945. Saturday morning included a visit to the Corinthian Yacht Club, and a boat ride, with refreshments and Lin Damon as host — all very pleasant except for a brief shower. After lunch, the four golf enthusiasts, Young, Dana, Bradlee, and Fiske negotiated the nine-hole "toy" course behind the hotel, without serious difficulty (scores not published). Then followed the class picture with all 24 present, and a very good one, as you will see in the class book.

After dinner came the usual reports of Secretary and Treasurer, including statistics, comments on the Alumni Fund by our class representative, Harry Young, the reading of telegrams and letters from Hopton, Kimball, Smith, Albert Pierce, Hanington, Walker, Birks, Ricker, Ball, and White, and reply cards and best wishes from Warren, Moseley, Hersam, Colburn, Ryder, Garrison, Keane, Thompson, Atkinson, Campbell, Forbes, and Pinto. Appropriate remarks or felicitations from Harry Clifford '86 were followed by an interesting talk by Walter Douglass, explaining his work in Washington for the government on miniature models, which developed from his hobby of making miniature furniture. Good weather, good food, and good fellowship made this gathering unusually pleasant. You get fairly well acquainted after fifty-five years, and many of those present have been regular attendants at our five-year reunions and yearly dinners. Our ranks may diminish but not our loyalty to our Class and to M.I.T. Time marches on!

Frank Howard sent us a post card dated August 7 from Grand Lake, Colo., reading as follows: "I am enjoying this grand and rugged country and taking pictures with a camera which is giving me some trouble, but I am hoping for the best. Hanington has helped us very much. He has a grand museum. I'm leaving Grand Lake tomorrow for Colorado Springs and the South. Back home about September 10." — The last we heard from Charlie Ricker in June, he was at the Sturgis Convalescent Home, 1729 Livingston Street, Evanston, Ill. He hoped to go to the Hotel Dudley in Salamanca, N.Y., for the summer.

Gorham Dana wrote from his summer home at New London, N.H., in August, and following are some personal comments: "We are having a fine summer here with plenty of vegetables from our own garden, including some 30 quarts of raspberries. The birds ate up all the strawberries. I am looking forward to having Walter Douglass and his wife here to dinner before long. We had a meal at the Aiken Lodge cabins recently and found it as nice as ever. Dorothy looked well and said that Mrs. Aiken was due a little later. Frank Howard called shortly before starting on his western trip. I had a short letter from Hanington recently, enclosing some humming bird pictures. We have had some very interesting sessions with the humming birds this summer, which I will tell you about some day."

The following extracts are from a letter from Ed Smith written last July: "A letter of birthday greetings from good old Barney has turned up among some of my old papers. It was written from Cohasset on a 45th reunion letterhead. It was on the occasion of my 67th; my 77th is now close at hand. It was a fine, friendly, and gracious letter. How cheery and cheering Barney could be in spite of his handicap! He evidently enjoyed our 45th a lot, remarking 'It was a good success — one of the best we ever had.' He expressed regret that I was not there and evidently tried to let me in on the festivities, relating that a birthday cake was presented to Charlie Garrison on Friday night. With enthusiasm he described the forthcoming class book descriptive of the 45th reunion. I regret that the 45th could not have been shared with Barney and all of you, just as my absence from the 55th is an unhappy memory. I simply could not make it."

The following comments are the result of "duress" (Dictionary: "Compulsion by fear or force") with Harry Young as the compelling force. It happens that your modest and retiring Secretary "was elected

to honorary life membership in the National Fire Protection Association at its 50th anniversary meeting in Boston on June 4. . . . This honor was conferred on Mr. Fiske for valuable service rendered over practically all of the 50-year period." At least it was so stated in the *Story of Grinnell*, for July, 1946. A picture was taken at the banquet showing the presentation by the chairman of the board, with the President of the N.F.P.A. looking on with a somewhat sad smile. Gorham Dana says my picture is too solemn, but who wouldn't be when anything like that is sprung without notice, and appropriate or appreciative remarks are in order? This same story further mentions some ancient and modern history of little importance, but "duress" wins. He (your Secretary) was responsible for the first publication by the N.F.P.A. in 1903, and he was the first editor of the *Quarterly* published in July, 1907. He went with the Grinnell Company in 1919, has been since then manager of the inspection and service department, which he organized, and manager of the insurance department. More recently he has figured as chairman in charge of accident prevention and safety work and assistant to the President, as jack of all trades, including some sales work. For all that time he has been active in the work of the National Automatic Sprinkler Association, and is chairman of its insurance standards committee. He is perhaps most widely known as joint author of the *Hand Book of Fire Protection*, which was first printed in 1896 and assigned to the N.F.P.A. in 1936, an event noted in the 50-year book of the N.F.P.A. with the following comments: "Enormous prestige has accrued to the Association by the publication of this standard reference volume, which is so recognized throughout the world." It is hoped that the above will satisfy Harry Young, or any other classmates who respect, admire, or condone my ancestral modesty. — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I.

1892

At the Alumni Reunion last June, members of '92 who were present were invited by President Compton to the dedication of the eye clinic in the Homberg Infirmary, established by the William R. Kales Fund. This fund of $75,000 was presented to the Institute by Mrs. Kales and her family in 1944, "to establish and maintain an eye clinic in the Medical Department." After the dedication we were invited by Dr. Compton to be his guests with Mrs. Kales and her son Robert at the 50-Year-Class luncheon. Present at the dedication and luncheon were Carlson, Ingraham, Marsh, Ober, Dr. Worthington, and Fuller. Carlson, Ingraham and Mrs. Ingraham, and Fuller also attended the Alumni Banquet in the evening at the Statler Hotel and listened to a very pleasant and profitable program, which was set forth in The Review for July.

During the summer the Class has lost by death two more of its members: Phillips Payson Bourne and John H. C. Church.

Phillips Bourne died in his 75th year on August 26 at his home, 10 Bassett Street, Foxboro, Mass. Soon after graduation, he entered the employ of the Worthington Pump and Machinery Corporation and rose to be the chief engineer of their Cambridge plant. He was a direct descendant of Richard Bourne, Cape Cod "apostle of the Indians" during King Philip's War, and one of the original settlers of Foxboro. He was born in Foxboro and, after attending the public schools there, entered Technology in 1888, taking up the Course in Mechanical Engineering, from which he was graduated in 1892. He was associated with the Worthington Corporation for more than 30 years, serving as chief engineer, first of the corporation's Cambridge plant and later of its Harrison, N.J., plant. In 1932 he returned to Foxboro in semi-retirement, after a residence in Winchester of nearly 25 years, during which time he was an active member of the American Society of Mechanical Engineers. On his return to Foxboro, he became affiliated with the Foxboro Company. He leaves his wife, Mrs. Mary E. (Booth) Bourne; two daughters, Miss Phyllis Bourne and Mrs. Harold E. Bray of Hingham; a brother, Jesse H. Bourne of Haverhill, and a sister, Miss Katherine C. Bourne of Foxboro.

John H. C. Church died in his 76th year on September 2, at his home, Bonny Bank, 95 West Avenue, Great Barrington, Mass. He had been a lifelong member of that community. He studied architecture at Technology with our Class and immediately after completing his course, was employed at the Monument Mills in Housatonic, Mass. (founded by his father). He rose rapidly as an executive and was chairman of the board of directors for many years. He was also a former president of the National Mahaiwe Bank, was president and a founder of the Fairview Hospital and a trustee of the Great Barrington Savings Bank. He was a past treasurer of the Berkshire Sand and Glass Company of Cheshire and for 23 years president of the Wyantenuck County Country Club, of which he was a charter member. He was also a member of the Union League Club, N.Y. He was a Republican leader in Berkshire County politics, having served on the Republican town committee and for nine years as Berkshire County commissioner. He leaves his wife, Mrs. Mary A. (Loop) Church; a son, George Church of Cocoanut Grove, Fla.; two daughters, Mrs. Delano de Windt, wife of the headmaster of the Berkshire School for Boys, and Mrs. Donald Weston of Pittsfield; a sister, Mrs. Clark Terry Durant of Great Barrington; nine grandchildren and four great-grandchildren. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

1893

Sixteen members of the Class attended another annual luncheon at the Engineers Club in Boston on Thursday, June 13. Those present included M. B. Biscoe, J. B. Blair, S. A. Breed, L. B. Buchanan, H. N. Dawes, C. E. Fuller, G. B. Glidden, F. H. Keyes, W. F. Lamb, H. M. Latham, E. I. Leeds, A. S. Pevear, F. D. Smith, C. M. Spofford, C. M. Taylor, and J. M. Tomfohrde. Before sitting down to partake of an excellent meal, arranged for by Bert Dawes, a founding member of the club, the meeting was called to order by our Vice-president, Harry Latham, who requested that we pay silent tribute to the memory of our Class President, Frederick N. Dillon, who had passed away only a few days before the meeting. At an informal business meeting immediately following the luncheon, it was voted that the following resolutions, prepared by a committee consisting of H. N. Dawes, H. M. Latham, and F. H. Keyes, should be placed on the class records and a copy of the same forwarded to Fred's family: "In the death of Frederick N. Dillon the Class of '93 at M.I.T. has lost one of its most loyal members, and the Institute a devoted Alumnus. For more than half a century, beginning with friendships established on Registration Day in 1889, he took an active and very helpful interest in our class affairs, contributing in no small measure through his attractive personality to the success of both undergraduate and subsequent class reunions. Evidence of his popularity as a student is borne out by the facts that he was chosen class marshal for our graduation exercises and twice elected president of the Class, first in 1897 for a period of three years, and again from 1937 until the time of his death. As a Class, we hereby record our deep sense of sorrow at his passing and extend to his family our sincere sympathy."

The following dispatch from Fitchburg on June 9, which appeared in the Worcester *Telegram*, is a good account of his extensive business and social activities: "Frederick N. Dillon, Sr., 74, 16 Prospect Street, vice-president and treasurer of the D. M. Dillon Steam Boiler Works and prominent in the industrial growth of the city, died . . . at Burbank Hospital after a long illness. . . . Mr. Dillon was a native of Fitchburg. He was a graduate of Fitchburg High School and of . . . Technology. His father, David Dillon, was founder of the Boiler Works, one of the city's major industries. When the elder Dillon succumbed, his son Frederick together with other members of the family carried on the business. Mr. Dillon was also president of the Brown Bag Filling Machine Co. He was active in the early textile development of the city and for many years was a director and clerk of the Fitchburg Yarn Co., which has become another of the large industries here. He also served for many years as a director of the Safety Fund National Bank and of the Fitchburg Co-Operative Bank. He traveled extensively and toured the world several times. His favorite recreation was golf. He was a founder, past president and a director of the Oak Hill Country Club. He was also a member of the Fay Club. He leaves one son, Frederick N. Dillon, Jr., of this city, secretary and treasurer of the Brown Bag Filling Machine Co.; two daughters, Mrs. Louis Dejonge of this city and Mrs. Margaret Fessenden of Lunenberg; three brothers, D. Frank Dillon of Leominster, president of the Boiler Works and president-treasurer of the Fitchburg Foundry division; Walter S. Dillon, secretary of the Dillon works, and Herbert Dillon, New York philanthropist; one sister, Miss K. Louise Dillon of this city, and two grandchildren." The private funeral service, to which flowers were sent in the name of the Class, was held on June 12. A note on behalf of the family from Fred's son, F. N. Dillon, Jr., '22, expressing thanks and appreciation of the flowers and resolutions, has been received by the Secretary.

Winthrop Parker Tenney died at the home of his sister in Crescent, N.Y., on May 18. He had lived in New York City for a long time and for more than 30 years had been employed as an underwriter for the Continental Insurance Company. Surviving him are his sister, Mrs. Y. Marcy Edwards, and a brother, Walter Harris Tenney of Boston.

Over the signature of F. M. Roy, acting agent, the Alumni Association was notified that Ariel B. Edwards had passed away at his home on January 8. In August a letter addressed to the Institute from the Rhode Island Hospital Trust Company, acting as cotrustee of the Edwards Estate, informed us that his will provided for the payment of a legacy to the Class of 1893. Recently a check for $2,000 in payment of this bequest has been received and deposited by our Treasurer to the credit of the Class in the Warren Institution for Savings. Other contributions to the class treasury, by members whose names we are not free to mention, make the total of such gifts in excess of $2,100 during the past year. The gift from Edwards, which is fully appreciated for its intrinsic value, is still more valued as an indication of his esteemed friendship for the members of our Class and his interest in the welfare of the Institute.

As of August 21, our Class had contributed $1,075.50 to the 1946–1947 campaign for the Alumni Fund, corresponding to 111.4 per cent of our quota for this year, and a number of former contributors (and others) are still to be heard from.

At the meeting in June, it was voted that a nominating committee consisting of F. W. Lord, G. B. Glidden, and F. H. Keyes submit for future approval by the Class the name of someone to fill the office of president. Several names have been suggested, but the committee is not yet prepared to make a recommendation. — Frederic H. Keyes, *Secretary*, Room 7–211, M.I.T., Cambridge 39, Mass. George B. Glidden, *Assistant Secretary*, 551 Tremont Street, Boston 16, Mass.

1894

The Alumni Day banquet was the occasion for bringing together five members of our Class, Batson from Newton, Bean from Manchester, E. M. Hunt from Portland, King from New York, and the Secretary. Some of us had met and attended the exercises during the day, and the evening gave an opportunity for further exchange of greetings and reminiscence and inquiries about the absent "boys." Despite difficulties in food and service, the banquet was one of the finest meetings ever held by the Alumni, and we all enjoyed the event. Our only regret was the usual one that other classmates were not with us.

Later in the summer, however, occurred another event which served almost as a small class reunion. When the Secretary was in California in March and had lunched with Jack Nowell and Austin Sperry, Nowell had told of his expected visit to his daughters in the Boston area, and about the first of August a telephone message from Gloucester announced that Jack was spending some weeks at Bass Rocks and would soon come to make his promised call. August 7 was the day set. As it approached, the Secretary, on the spur of the moment, arranged a class luncheon party and at once began to keep the telephone wires hot. He succeeded in getting John Chapman, Alan Claflin, Billy Pratt, and George Owen to meet at the Institute. Telephone calls to Walter Batson and Henry Lacount brought no responses, and Al Tenney and Henry Warren could not come but called up on the eventful day and had a brief conversation with Jack. All were delighted to meet Nowell again, some for the first time since graduation 52 years ago. Before departing to the Smith House for luncheon, someone wanted to see the portrait of the Secretary given by the Class, and a visit to the President's office was made. This visit provided the great thrill of the day, not on account of the portrait but because Dr. Compton was there, just back from the Pacific, and kindly invited us into his private office, where he gave us a half hour of most interesting and informal talk about the Bikini atomic bomb explosions, which he had but lately witnessed and explained some of the physical and radioactive effects resulting therefrom. It was a talk which enthralled us. Then with characteristic kindness he consented to join the party at luncheon, where he told us more of this epoch-making business. We parted with a deep feeling of gratitude to him. Thus the Nowell luncheon became in effect another small class reunion, which all present will remember with special pleasure.

We turn now to news from the field — first of all, a letter from Harry Bates, telling of the hopes of his grandson to come to Technology after attendance at one of the colleges with which the Institute has affiliations. May it be so. Harry retired from active work last January after 52 years in the fertilizer and heavy chemical business in which he was the production manager of 30 plants, many of which he had designed and built. His later service was largely in the research field with highly productive results. If personal experience may be trusted, it is surmised that for a man with Harry's active mind and long experience retirement means merely a change in the direction of the working of his fertile brain, for it is impossible to think of him as really inactive. Bates has seen and greatly shared in the astounding development in his field of the chemical industries since he first entered it more than a half century ago, and deserves the relief from responsibilities that he has carried so long and ably. We hope he will have many years to enjoy it and maintain his old friendships. He continues to live in Atlanta, but we in New England hope he will visit us from time to time.

A letter from Will McJennett states that he has found it necessary to leave Scituate, Mass., where he has lived for some years. His apparently incurable lameness required that he should be in a combination home and hospital where he can have constant medical care. Such a place was found in Riverdale, a part of New York City overlooking the Hudson, where the Schervier Hospital is located. Although extremely lame, Will can still get about a little, even to going to Manhattan at rare intervals. He would enjoy seeing or hearing from classmates. His address is care of the Schervier Hospital, New York 63, N.Y.

It was a happy coincidence that just as we were welcoming Jack Nowell the Secretary received a card from Austin Sperry telling of his attendance at, and showing a view of, the Grove play at the annual High Jinks of the Bohemian Club, and cordially adding, "Wish you were here." The same greeting was on another card recently received, not from a classmate but a fun-loving friend, which bore a picture of the Alcatraz Federal prison. Thanks to both senders. — Jim Kimberly sent in his address in May as Box 632, Neenah, Wis. This seems to be Jim's summer stamping ground, as well as his boyhood home, while Tryon, N.C., seems to attract him in spring and fall. During the war, he was busy in Washington. — Another change of address is that of Joseph H. Kimball. After several years as engineer for the Tennessee Valley Authority at Knoxville, Joe now is located at 24 Sherman Court, New Britain, Conn. No statement was made as to his present activities, if any. — Walter V. Brown has sent in his address as 24 Hamilton Road, Glen Ridge, N.J., the town in which he formerly resided, before going to Orlando, Fla. — Billy King and Mrs. King have announced the engagement of their attractive daughter Patricia to Norman O. Mason, who is now completing his course in mechanical engineering at Cornell after a long service in the Army. Many of the Class who were at our 50th reunion at Swampscott will remember the fine way in which Patricia paid attention to her father's classmates and their wives. Last year she was a student at the Boston Museum of Fine Arts School. Our best wishes to her and her man.

It is with sadness that another death in our ranks must be reported, that of William H. Sayward, Jr., on August 2. Sayward was the sole graduate in Biology in 1894. He was a very friendly fellow, with a keen sense of humor, and much enjoyed by all who knew him well. After graduation, he spent a few months traveling in Europe and then entered the Harvard Medical School. An illness in his third year compelled his temporary withdrawal, but he later returned and received his M.D. degree *cum laude* in 1899. As a senior student, he was for some months an extern at the Massachusetts General Hospital. He began the practice of his profession in Dorchester in September, 1899, was assistant, and later physician, to the children's department of the Tremont Dispensary, and was for three years on the medical staff of the Boston Home for Incurables. He also served in other professional ways; for three years in the First Corps Cadets, Massachusetts volunteer militia, and on the executive committee of the Public School Association of Boston. In June, 1900, he married Miss Mary Parkman Robbins; and two fine sons, William Sewall, in 1901, and Parkman, in 1903, were born to them. In 1903, the family removed to Wayland, where Sayward continued his professional practice for some years, until interrupted by a nervous breakdown. After apparent recovery, he resumed practice, but shortly afterward again suffered a nervous prostration which forced him to abandon his chosen profession, and from which his recovery was slow and never perfect. Having distinct literary ability, he had always enjoyed writing as an avocation; hence, as he gained in strength, he

wrote numerous amusing sketches and plays for amateur production. He in part recovered his physical health by outdoor life, tramping or bicycling in many parts of New England and stopping at youth hostels, where he often entertained the young people he met by recital and play reading, for which he had decided talent. Ill health seemed to pursue him, however; breakdowns recurred; and his later years were clouded with constant illness and disappointments, despite the devotion of his family. Through all these years, Mrs. Sayward assiduously cared for him, the sons being established elsewhere with their own families. Having a thorough knowledge of art, Mrs. Sayward took a position as a member of the lecture staff at the Museum of Fine Arts and is widely known to the many people who weekly seek the museum. Will Sayward was to the Secretary a constant and loyal friend from undergraduate days. Many who knew him less well may not feel so deep a sense of personal loss, but all will feel sorrow that one who had shown in early manhood such fine qualities of heart and mind should have been obliged to endure to such an extent "the slings and arrows of outrageous fortune." — SAMUEL C. PRESCOTT, *Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1895

It is good to learn of the Diamond Jubilee testimonial dinner tendered to Charles F. Wray by men of the board of education and administration staff of the schools of Rochester, N.Y., on May 15, at the Locust Hill Country Club, Rochester, N.Y. His colleagues expressed themselves as follows: "Charles Fredenburgh Wray is now completing 30 consecutive years of service on the Board of Education. He was appointed in 1916 by the late Mayor Hiram H. Edgerton, upon the death of Mr. Howard A. Barrows. It is doubtful whether Mr. Wray's record of service has been equalled in any community of the country where school board members are elected by popular vote. It certainly sets a new record for Rochester.

"One week from today Mr. Wray reaches his 75th birthday. To be sure, that is no record in span of years. But the challenge is open to produce one who has covered this span and to whom the *to be or not to be* question of Hamlet finds less application. His character would dispel the cynicism of Diogenes himself. Along with his genuine liking for people, which finds expression in an unfailing courtesy and countless little acts of unremembered kindness, as well as in a passion for unselfish public service, he possesses the gifts of humor and good humor.

"In Rochester he was born, and in Rochester he has resided always. After completing his elementary education in Schools Three and Six, he took his college preparatory work in the Hale School for Boys, on Lake Avenue. Four years in . . . Technology make up his longest absence from Rochester.

"Today he is actively carrying on his work as secretary and treasurer of Henry Wray and Son, Inc.; and of the National Brass Manufacturing Company; as trustee of Monroe County Savings Bank; as director of the Employers' Reinsurance Corporation of Kansas City, Mo.; and of the Exchange Mutual Indemnity Insurance Company of Buffalo; as a member of the board of managers both of Highland Hospital and of the Rescue Mission; as one of the advisory board of the Young Men's Christian Association; and as elder and trustee of his church. Add to these his duties as president of the Board of Education, and even then the list is not complete.

"To you our honored guest, we extend gratitude and congratulations. We shall always think of you with affection and respect. May the years ahead bring to you a full measure of the satisfaction that your long and useful life has brought to so many others."

Some boys may want to know about Joe Cushing, of Lily Dale, N.Y. Your Secretary neglected to tell you that he passed away on April 14, — Joseph E. Walworth, of Andover, Mass., was in Florida for six months during last winter and has returned again to Andover. We hope to learn whether or not he has a permanent residence in Florida and henceforth plans to spend his summers in the North. — Since the death of Eugene H. Clapp, our Class has had no class agent for the Alumni Fund. To date, records show that 82 per cent of the allotted quota has been subscribed. If any fellow happens to get a windfall and would like to chip in, tell your Secretary, and he will come to the rescue.

The Alumni Day Banquet of June 8 was attended by three of the '95 Old Guard; Alden, Hunt, and Yoder. Mrs. Alden was also on hand. Yoder was fortunate to be seated with old friends — Dawes, Keyes, and Thomas of '93, and Batson, Bean, Hunt, King, and Sammy Prescott of '94. The Aldens were a bit tardy in being seated and drifted to another section of the hall. Sam Hunt was happily seated across the aisle.

We learn of the announcement of Charles E. Wilson '91, President of the General Electric Company, that the Charles A. Coffin and Gerard Swope fellowships, totaling $14,600 for advanced research work during 1946-1947 at some of the country's leading universities, were awarded during late May by the General Electric Educational Fund to 10 young graduate students. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

Our golden anniversary reunion is now a thing of the past, but we can enjoy the pleasant memories of that event which climaxed and even eclipsed all previous five-year reunions of the Class.

The start was made on Wednesday, June 5, when the following assembled at about noon in the Secretary's office at M.I.T.: Mrs. Helen Chamberlain Dodd, Moat, Davis, Damon, Smetters and wife, Mansfield and wife, Rockwell, Anderson, Henry, John Ashton, Perry Howard and wife, Jacobs, and Locke. Practically all of these lunched together in Walker Memorial and then all journeyed immediately in separate automobiles to our old stamping ground at East Bay Lodge in Osterville. There we missed the former host, Charlie Brown, but were given a most cordial reception and fine treatment by his successor, George M. Leghorn, and his gracious wife. Other arrivals that afternoon included Dorrance and wife, Con Young, Lewis Breed and wife, Walter Stearns and wife with Jim Melluish, Wayne, Sager and wife, and Joe Harrington, so that we had a total of 28 that night. The evening followed the pattern of previous years with some cards, plenty of sociability with talk and reminiscences, and then more talk and reminiscences. The day had been showery, and some rain continued on the drive to Osterville, but the sun came out to greet us on our arrival, and we were favored with beautiful weather during the rest of our stay.

Thursday forenoon brought additional arrivals in the persons of Hersey with Myron Fuller, Pierce with Eynon and Tilley, Henry Hedge with Jim Driscoll, Bragg and wife, Sears, Pauly, Barker, F. A. Howard, Will Coolidge and wife with Al Cluett. The afternoon additions were Litchfield, Jackson and wife, Bates, Hewins and Clifford. This made 22 more for the day and brought the total up to 50. The day was spent most informally with some playing golf, some automobile riding, and a lot just sitting around visiting and talking. It can be stated definitely that no one missed a single meal of the fine food served by our host. Paul Litchfield had traveled by his own Lockheed plane to the Hyannis airport. In fact, he says that he now never travels in any other way. His is a commodious, twin-engine affair with a crew of two pilots, J. Ralph Seider and William C. Holbrook. Paul most kindly put the plane at the disposal of classmates, and during Thursday and Friday several groups of eight took advantage of the opportunity to see the whole Cape Cod and island section of Massachusetts from the air. The weather was ideal, and all who went (some for their first air trip) came back thrilled by their experience and with a feeling of deep obligation to Paul and his pilots for the pleasure that had been afforded them.

Thursday evening was spent according to tradition in enjoying the movies of past reunions, which were run by Will Coolidge, ably assisted by Henry Jackson. Will's projector was of the very latest type and very delicate, while the films were old, and consequently there occurred an occasional lack of co-ordination, but Will's experience as an expert operator stood him in such good stead that the whole show went off very acceptably.

Friday, June 7, dawned as another fine day, and the forenoon saw five more arrivals. Grush brought Robinson and Rundlet while Charlie Tucker brought his wife. Finally, in the afternoon, there came Charlie Stamp, Harry Baldwin, and Sam Hunt. Con Young, who had been with us from the beginning, except as he went home nights, brought Abby on this last day, and she was accompanied by a neighbor, Mrs. Herman Curtis. We could also count in the party the two pilots of Litchfield and Tom Drohan, the talented accordion player, and finally credit is due to F. W. Bartlett, who drove over Friday forenoon from his home in Yarmouth Port to make a brief call. In spite of our most persuasive powers, we were unable to prevail upon him to attend the class dinner in the evening or even stay to lunch. The final score was 48 classmates, including Bartlett and Mrs. Dodd, 12 wives, 1 lady guest, 2 pilots and 1 accordion man, or a

total of 64. The attendance of 48 classmates is believed to set a record for a class of our time after the passage of half a century.

During the day Friday, the informal schedule was much the same as on Thursday. The late arrivals were given an especially warm welcome. A golf putting contest was pulled off on the Wianno greens in the afternoon. At about 5.00 P.M., the group assembled back of the hotel for the class picture taken by Paul W. Stiles of 70 Chase Street, Hyannis, and this was followed immediately by assemblage at the outdoor punch bowl near by to partake of the special 50-year class brew which had been concocted by those experts, Damon and Davis. This, like everything else connected with the reunion, was definitely super and most refreshing and enjoyable.

The culmination or grand finale of our celebration was the class dinner on Friday evening, for which host Leghorn had provided a special menu which included lobster thermidor. Except for a small head table, the seating was by groups around small tables in the dining room. Mrs. Dwyer and her staff of young lady waitresses did a swell job of serving. Enjoyment was greatly enhanced by the fine accordion playing of Tom Drohan with his unlimited repertory of tunes both old and new, and no tune was requested which failed to be immediately forthcoming. Singing was practically continuous throughout the dinner. At the gathering before dinner, it had been officially voted to elect Mr. and Mrs. George M. Leghorn as honorary members of the Class, and they became our honored guests at the head table. One pleasant feature of our reunion was the simultaneous appearance at East Bay Lodge of a small contingent of the Class of 1910, which was observing its 35th anniversary one year late; and this group dined with us.

After the dinner the Secretary opened the meeting with a few words of welcome and congratulated the Class on their record attendance, mentioning specifically the newcomers in the persons of John Ashton, Mrs. Bragg, Mr. and Mrs. Breed, Helen Chamberlain Dodd, Mrs. Dorrance, Jack Eynon, Mrs. Jackson, Mrs. Mansfield, Fred Rundlet, Mrs. Smetters, Charlie Stamp, and Mrs. Stearns, and also the two newly added honorary members, Mr. and Mrs. Leghorn. Attention was called to the presence of the two long-distance men from California, Eynon and Stamp, who were vying for the individual honor. Eynon claimed that his home in San Diego was five miles further west than Stamp's abode at Rancho Santa Fe, but Stamp rebutted with the claim that he had to travel seven and one-half miles west from his home before he could board his train for the East.

Next came messages and items on absent ones. Mark Allen had had the motor trip all planned with his son Richard, but at the last minute a critical situation developed in the construction of his new plant building, and he wired his regrets and greetings. Butler Ames was daily expecting to sail for Italy to revisit once again his villa on Lake Como. Actually, he did not finally get away until later in July. Bakenhus had an important court case in Kingston, N.Y., so he took Mrs. Bakenhus on vacation at Mohonk Lake, which was within easy driving distance of Kingston. He sent greetings by post card and by wire. Later, on June 15, Mrs. Bakenhus was taken seriously ill and was removed to the Vassar Brothers Hospital in Poughkeepsie, and Bakenhus established headquarters in the Nelson House there. The last report was that she was showing some improvement. Arthur Baldwin had made all plans with high expectations but had the tough luck to develop an infected leg the latter part of May, and his doctor refused to allow him to travel, so that he could only send greetings. He later made good recovery but was suffering from arthritis. Boardman in Maine had had strong hopes of attending but finally had to give it up. Chenery from California, where he perambulates in a wheel chair, wired greetings which included a "Hurrah for '96." He said he would gladly cross the continent for our memorable reunion if only he had the strength. Buster Crosby's widow had been given a most cordial invitation to attend our dinner but had been obliged to decline regretfully because of a severe cold. Elliot, who is in Thomaston, Maine, wrote that Boston was his limit of travel and that any place beyond was too long a way from home for a man in his seventies. (He is still one of the most active fellows in the Class.) Bob Flood could be with us only in spirit, but he sent along a four-verse ditty for us to sing: "Draw up your chairs, ye faithful ones / And sing Co-ix Co-ix, / We're the concentrated extract / Of the Class of Ninety-six. / So raise your voices loud and strong, / Let's make this old place rock / First to our beloved M.I.T. / And then to Charlie Locke. / Our classmates wher'er they are, / In spirit sing Co-ix, / It's the fiftieth anniversary / Of the Class of Ninety-six. / And you, dear Charlie, you're the guy / We all look to to fix Immortality, / but don't stop now, / On the Class of Ninety-six." Rear Admiral Hamlet felt very badly that he had to pass us up and give priority to the conflicting observance of the anniversary of his graduation from the Coast Guard Academy in New London. He could figure out no way of being in two places at the same time. Georgie Harkness had promised to come, but old man inertia apparently overtook him and he finally reneged. Charlie Hyde sent his very best wishes and heartiest greetings to all. He could find no solution to the problem of making a cross-country trip to Osterville. From the day of his birth Marsh Leighton had counted on being present at our golden reunion and taking his part with the old '96 quartet in singing their old rallying song, "We Meet Again Tonight, Boys," but a very important matter of business for which he had made a long standing commitment tied him up in Washington. It is significant that all the old quartet are in fine health, and the three other members, Barker, Stearns, and Young, were all present. Leland had early hopes of coming but finally found that he could not get away to make the cross-country trip from California.

Lythgoe, who was in Atlanta delivering papers before the 50th anniversary meeting of the Association of Food and Drug Officials of the United States, of which Association he had been president two years before, wired greetings to us. Billy McAlpine had to attend a conference in Atlanta during the first week of June. McIlvaine had felt sure that he would be with us but finally was obliged to give up the idea. Again Ernest Moore, as Boston market gardener, found that the combination of June's being the busiest month of the year and a condition of labor shortage even worse than during the war years did not allow him to get away, even for a day. Guy Morrill sent a card of greeting and bemoaned the fate that had dashed his hopes of being with us. Mrs. Morse was recovering from a long illness but had not convalesced sufficiently to enable Lou to feel that he could be away from her. Father Partridge sent greetings from Philadelphia with regrets that he was unable to attend because he had not fully recovered from the poisonous effects he believed to have come from drinking Philadelphia water four months before. We had counted on the definite assurance from Joe Pillsbury that he would come across the country from Vancouver, but the unexpected arrival of his eldest daughter and husband with two children from Mexico on the first of June sent his plans all awry, much to his disappointment. Peabody, who had never attended a reunion, had his heart set on this one, but sickness in his family prevented. Le Baron Russell chose Wednesday, June 5, for doing some reforestation on his place in Wayland and must have let himself out on a limb so that he had to telephone us at Osterville that evening that he was laid up with a sprained ankle and could not travel. Haskell Smith has to follow his doctor's orders and go slow after having over exercised the snow shovel winter before last. For the last five years he had anticipated being with us but finally decided regretfully that he was not quite up to it and had to content himself with sending greetings. Bradley Stoughton had to see Mrs. Stoughton off for Switzerland the last of May and that, with a lot of affairs in Bethlehem, so tied him up that he could not get to Massachusetts. When Mike Sturm finished his war work last December, he went with a new firm on some very important work, mostly hospitals, but as a newcomer he rated only one week of vacation this year and that had to be taken in September so that he could only send the fellows heartfelt wishes for a happy reunion. Clem Tower was one whom we had expected to have with us but it was later learned that he had been doing a stretch in the hospital. The last word was that he was back home and doing nicely. John Tilley thought he had Charlie Trout all sewed up to come, but Charlie wriggled loose somehow and sent a last-minute plea that he was so busy in New York that it was impossible for him to be with us. Henry Waterman in Nova Scotia had fully intended to come to our reunion and was much disappointed when his plans were unavoidably upset.

A silent, standing tribute was paid to those classmates who had attended reunions previously and who had passed away since our 45th: Dave Beaman, John Brooks, Charlie Brown (honorary member), Buster Crosby, Harry Fisk, Harry Gilman, Johnny Hallaran, Will Hedge, Gene Hultman, Joe Knight, Charlie Lawrence, Gene Laws, Charlie Nevin, Lucius Tyler, Perl Underhill, and Freddie Walker. In addition, we have lost 36 other class-

mates by death during the past five years.

Statistics show that of the total of 489 names on the class list, including 196 graduates and 293 nongraduates, 213, or 44 per cent, are now living and 276, or 56 per cent, are deceased. Of the 196 graduates 101, or 51.5 per cent, are living and 95, or 48.5 per cent, are deceased, while of the 293 nongraduates, 112, or 38 per cent, are living and 181, or 62 per cent, are deceased. The classbook of Harvard's 50-year class this year gives just over 35 per cent of the graduates as still living. Maybe there is a moral to this.

Since the old '96 quartet was incomplete, Con Young rendered two solos with Jim Melluish as piano accompanist, which evoked much applause. Con also sang two new verses which he had added to his ditty of five years ago: "Oh, Charlie dear! Oh Charlie dear, / We're mighty glad that you are here. / For without you and the top hat, / We wouldn't know where we are at. / And while we think that we are men, / We've just turned into boys again. / So with your help and guidance now, / We'll do our best for you — Amen." It is marvelous how strong and true Con has kept his voice. By unanimous votes the presentation of four pages of secretary's minutes of the last meeting and the reading of a detailed financial report were dispensed with. The class treasury had a balance of $213.65 and the class contributions to the M.I.T. Alumni Fund this year already exceeded the wonderful figure of $10,000.

It was significant that this dinner lacked only a few hours of being on the 50th anniversary of our Class Day exercises in Huntington Hall on June 8, 1896, when the program read: History by Drum, Statistics by Harrington, Prophecy by Young, Poem by Mansfield, and Oration by Waterman." Con Young was therefore called upon to retell what he had seen in the crystal ball 50 years ago, and it was indeed surprising to find how some of his prophecies which had seemed most fantastic at the time had really come true. Joe Harrington, speaking again as statistician has very kindly prepared a paraphrase of his impromptu remarks, as follows: "It is hard to realize that it was 50 years ago that I stood on the platform in Huntington Hall and read a paper on what I was pleased to call 'statistics.' These consisted principally of figures relating to height, weight, and equatorial dimensions of various members of the Class together with other matters of momentary interest. These things were quite proper and timely then and I hope provided a few minutes of amusement to my hearers. *Now*, we are the honor class, and we have a quite different conception of what constitutes interesting 'statistics.' We are concerned more with the essentials of right living, the record of accomplishment in well-doing, and the outcome of lives spent in the pursuit of American ideals. Charlie Locke's report of an attendance here of 51 per cent of the living membership of our Class eloquently attests the activity of our class spirit. In good-fellowship and loyalty to the Class and to Technology, the record still stands at 100 per cent. From the vantage point of the half-century mark, we are able to get a true perspective of the lives of those who went through the arduous four years at Tech as the Class of '96. Detailed figures are not needed to prove the obvious. The lives of those who have carried on for 50 years and of those whom we sincerely miss tonight, eloquently testify to the thorough preparation and the indomitable spirit we acquired at Technology. It is our job to continue to uphold the traditions of Technology, maintain the friendships now so well established and set such an example to those who follow us as will make the Class of '96 remembered always as the ideal of Technology students."

It was unfortunate that Henry Waterman could not be present to give us another oration after his experience of half a century in public life, but Eddie Mansfield had prepared a 50th anniversary class poem for the occasion: "The years, two score and ten, have passed / Since, filled with joy and pride, / The famous Class of Ninety-Six / Their studies cast aside. / Through Rogers Hall for four long years / With hurried steps they beat / A pathway to the floors above / Some 'Prof's' grim smile to meet. / They learned to fill their tabular views / With football games and dates; / They slept through lectures long and dry / Applied by Arlo Bates. / They stormed King Harry Tyler's throne / To change their F's to C's / And begged the Faculty to raise / Their spirits by degrees. / They found out how to make irate / The Bird within the cage / For 'rain-sticks' handed in point first / Aroused her fiercest rage. / They played at being 'Soldier Boys' / With muskets shining bright / Not knowing that in later years / Their sons might join the fight. / The homeopathic lunch downstairs / Would idle moments fill; / While each one rushed to be the first / To pay the Bursar's bill. / Whene'er religion filled their hearts / They went to see the 'Pope' / 'Immejetly' their spirits fell / They saw no cause for hope. / Until they to the 'Chapel' hied / Their feelings to beguile / 'Twas there they viewed fair heaven's bliss / Indulging in a smile. / Week in, week out, with earnest zeal / They worked with heart and soul / As on they climbed o'er rocky steeps / To reach the longed-for goal. / While 'sports' and 'grinds' their whims pursued / The fleeting hours passed / All leading to that day supreme / When 'sheepskins' loomed at last. / But that was 50 years agone. Since then much H_2O / Has swiftly vanished o'er the dam / And we have watched it go. / Our classmates once so closely held / By ties that tightly bind / Were scattered to the earth's four winds / As blessings to mankind. / They rose to fill the growing need / For men well trained to serve / And time has added to their fame / The honors they deserve. / But some there were who left our ranks / Before the race was won; / In memory they still shall live, / We miss them every one. / The shrine once hallowed by us all / On Boylston thoroughfare / By friends, iconoclastic, fell. / It is no longer there. / But more pretentious buildings rose / To carry on the name / And brilliant scientific stars / Have added to its fame. / And now that 50 years have passed / We're starting out once more / To add new laurels to our crowns / And double up the score. / But what the future holds in store / Can never quite compare / With all those happy 'goings-on' / Around old Copley Square. / We'll ne'er forget those grand old days / Wherever we may be, — Rackerty-rix, co-ix, co-ix, / Three cheers for M.I.T.!"

"And to paraphrase the closing stanza of the class poem read on June 8, 1896: To join the world of men we hastened on/ And no poor weakness dragged our manhood down. / We still are true to that which we had won / While adding honors to our olive crown."

The Secretary introduced Will Coolidge as the next speaker, but John Rockwell very insistently took priority, and Will, after some protest, finally yielded graciously. John began to mumble something about Roxbury pudding stone and its characteristic conglomerateness being like a certain individual 54 years ago who had four years of assaying which yielded some residue and ash but mostly precious metal. This specimen was rather bulky and had advanced through various stages on the teaching staff in the Mining Department at M.I.T., finally becoming professor emeritus. He had been Class Secretary since 1908, following Guptill and Mansfield in that order. He had assayed men and had especially put '96 through his human crucible, bringing forth on one and all in The Review notes the truth in all its nakedness. In turn he had been analyzed and certified report gave some ash in the form of hydrous silicate of magnesia or meerschaum pipe to you, and seven elements of all pure gold standard — in order, E–Energy, I–Ingenuity, L–Leadership, R–Righteousness, A–Accomplishment, H–Hospitality and C–Character, which, spelled backward, finally gave the crowd an inkling of what John had been mumbling about.

At this point John called on Ralph Henry, who came boldly out in the open without any mumbling. He first pointed out that no matter how it was viewed, '96 was always right side up, which had only occurred 77 years ago for the Class of '69, and would next occur 23 years hence. He produced an illuminated manuscript, suitably framed, which included three small evergreen four-leaf clovers and one large ever-gold four-leaf clover with the leaves separated into the four corners. It was a fine colored product of Ralph's personal handiwork with the following inscription: "To Charles E Locke. In affectionate appreciation of unselfish and faithful devotion as its Secretary and Treasurer 1908 to 1946 we the Class of 1896 Massachusetts Institute of Technology extend our gratitude on this our Fiftieth Anniversary Reunion the Seventh Day of June Nineteen Hundred Forty Six." The Secretary undertook to express his gratitude, when Rockwell burst out again, citing the paraphrase of Gelett Burgess lines often quoted by Grantland Rice, "And when the great Assayer / Comes to chronicle your fame, / He cares not if you won or lost, / But how you played the game." He thereupon handed the Secretary a package which upon being opened disclosed a fine alligator skin billfold containing a check for $1,150. This floored the Secretary, and all he could do at the moment was to say, "Thank you." Now that time has elapsed, he has recovered his speech somewhat and can say that while the receipt of such munificence is embarrassing, it is accepted in the spirit in which it is given, not as any payment

for service but rather as an expression of the enjoyment classmates have had working together with the Secretary excelled only by the enjoyment the Secretary has had on his part. This particular episode of our dinner closed with all joining in the song "For he is a jolly good fellow."

Finally, Will Coolidge, who had been waiting on tenterhooks, was able to make his presentation and give another one of his revealing talks presaging scientific developments just around the corner. He had brought a model of a new one-hundred-million-volt x-ray apparatus, which he explained, and most wonderful of all, showed slides depicting the actual smashing of atoms.

Saturday morning, June 8, saw all departing. With two or three exceptions their destination was M.I.T. in Cambridge to take part in the events of the Alumni Day program. As the 50-Year Class we were seated for luncheon at Dr. Compton's special table with other honored guests. Similarly, at the Alumni banquet at the Hotel Statler in the evening, the Class was placed close to the head table. Paul Litchfield, as the second speaker with Dr. Compton on the program, took as his subject, "Looking Ahead after 50 Years." The Secretary's part on the program consisted in presenting to Dr. Compton the contribution of the Class to the Alumni Fund, which, as of that date, amounted to the wonderful total of $10,023.82 from 117 contributors.

Two additional classmates who appeared at the luncheon on Alumni Day were Hattie Gates and Herbert E. Smith, and two more who came to both the luncheon and the banquet were Frank Guptill and Sandy Sanderson. This made a grand total of 52 bona fide classmates who attended some one of the events of our reunion week. Three men who had earlier signified their intention of appearing on Alumni Day failed to arrive. Later Willard Colman wrote that it had been a great disappointment to him but at the last moment so much extra work had come up that he found it impossible to get away. Sjostrom, who had been ill, was recovering very nicely but had had the misfortune to suffer a little setback when reunion day arrived. He is all right now. Walter Pennell just did not come and no further word came, but it is known that he is leading a very busy life in Exeter, N.H.

Henry Grush has sent in prints of ten assorted reunion snapshots. These are excellent views, some taken of outdoor groups and some of the class dinner tables. Henry says he will gladly supply sets to any who wish at the bare cost of printing. His address is 1118 Brook Road, Milton 86, Mass. — CHARLES E LOCKE, *Secretary*, Room 8–109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

1897

The Secretary has received information indirectly that George A. Moran, V, died recently at his home in Bound Brook, N. J. For many years George was chief chemist at the Pacific Mills in Lawrence, Mass. From the Pacific Mills he went to the application laboratory of the Calco Chemical Division of the American Cyanamid Company at Bound Brook, N. J. He retired on May 1, 1945. Mr. Moran was a member of the American Chemical Society and was one of the organizers of the American Association of Textile Chemists and Colorists.

Your Secretary has only recently been advised that William A. Kent, a retired United States Army colonel, died on March 27, 1945, at his home in Jackson, Miss. Also, that Edgar B. Baumann, IV, died at his home in Northbrook, Ill., on March 15, 1945; and William H. Fox, IV, in December, 1945. No further details are available at present relative to these three sad events.

Early in the year, J. Franklin McElwain, IX, was presented a plaque by the New England Shoe and Leather Association, "in recognition of his distinguished service to our association and the shoe industry."

Edmund S. Manson, VIII, a professor in the physics department of Ohio State University, retired early in the summer after 39 years of service with the university. While at the Institute, he did special work in astronomy. After graduation, he did staff work at the Lowell Observatory and at the Peru station of the Harvard Observatory. He joined Ohio State University as an instructor and later was advanced to the rank of full professor. He was in charge of the university's Emerson McMillen Observatory, which celebrated its 50th anniversary in June.

Professor C. B. Breed, I, retired from the Faculty of the Institute on July 1 of this year. He was the former head of the Civil and Sanitary Engineering Department and had been a member of the Institute staff for 48 years. In 1898 he was appointed an assistant in civil engineering, becoming a full professor in 1914, and he was the head of the department from 1934 to 1944. He has been an adviser on construction and economic problems for a number of the country's leading railroad systems, as well as consultant for various state public service and public works departments. In 1939, Professor Breed, in association with two other engineers, completed a two-year study of highway costs for the Association of American Railroads. During World War I, he taught navigation and aerial observation in the United States Army School of Military Aeronautics, later serving as president of the academic board of that school. In the recent war he was confidential adviser on transportation to the Army and to several railroads. He is widely known for his textbooks on engineering subjects.

On July 1, Henry M. Loomis, V, retired from the National Canners Association in Washington, D. C., after 30 years of service. Henry was born in Yokohama, Japan, where his parents were living in the early 1870's. In 1890 he came to this country to complete his high school work and receive his S.B. degree in chemistry from the Institute. His first job was with the Mathieson Alkali Company and the Acheson Graphite Company in Niagara Falls. In 1904 he was a chemist with the Pennsylvania Dairy and Food Commission, where he was frequently assigned to court cases as an expert witness. After the passage of the Federal Food and Drugs Act, he was appointed a food inspection chemist in the Bureau of Chemistry of the Department of Agriculture. While there he became chief of the three Department laboratories at Galveston, Seattle, and San Francisco. He was a member of the Board of Food and Drug Control. His last position in the department was a chemist in charge of food control. Henry's work had made him well known in the food industry, and this resulted in his appointment as director of inspection of the Maine sardine industry with the National Canners Association. In World War I, he was a volunteer member of the canned food division of the United States Food Administration. In 1919, he became director of inspection and assistant secretary of the National Canners Association and later, until his retirement, was the director of the consumer complaint service. Now that Henry has reached retirement in good health, he expects to pursue his two major hobbies, fishing and stamp collecting.

Early in the spring, William Binley, XIII, retired from his position as naval architect at the Fore River plant of the Bethlehem Shipbuilding Corporation at Quincy, Mass. After leaving the Institute, William took a postgraduate course at the university in Glasgow, Scotland. Before coming to Fore River, he was located at the New York naval shipyard. In April, Mr. Binley was given a testimonial farewell banquet at the Quincy Neighborhood Club which was attended by some two hundred leaders in ship design and construction in New England. Greetings and tributes were voiced by Captain Davis, of the Navy, supervisor of shipbuilding and inspector of ordnance at the Quincy plant, by John T. Wiseman, manager of the Bethlehem shipbuilding district in New England, Sam Wakeman, Fore River's manager, Commander George W. Bailey, U.S.N., hull design officer at Fore River, and by others. They all spoke of Mr. Binley's valued services to the Navy, his unusual abilities, and his skill in leadership in his lifework, which was the supervision of hull drafting. He was rated as the nation's leading productive naval architect. Mr. Wiseman took as the theme of his tribute to Mr. Binley the words, "Tops 32 years ago and tops ever since then." He was presented with a Fore River-built plaque in replica of the heavy cruiser, U.S.S. *Albany*, now being outfitted at Quincy, and also a ship's bell. A matter of interest in connection with his work in Quincy is that he is the only survivor of a quintet of key supervisors who, in the year 1925, directed at the Fore River plant the world's greatest engineering job. It was the launching of the 888-foot airplane carrier, U.S.S. *Lexington*, the world's fastest warship, sunk by the Japanese in the South Pacific. Mr. Binley lives in Braintree. He has the best wishes of his classmates in his well-earned retirement.

Early in August, your Secretary sent out two letters along with the bills for class dues and a statement showing the financial standing. One of the letters was in the form of a questionnaire relative to the time, place, and method of observing the 50th anniversary of the graduation of the Class, which will occur in June, 1947. The men were requested to reply to the several questions asked, in order that the committee could get an idea of what the fellows desired. To date — September 18 — replies from only 15 men have been

received — rather a small percentage, you will admit. Come on, fellows, let us have your ideas.

At the Alumni Day Banquet at the Hotel Statler in Boston on June 8, the Class was represented by eight members, five of whom were accompanied by their wives. Those present were Mr. and Mrs. Worcester, Professor and Mrs. Breed, Mr. and Mrs. Daniell, Mr. and Mrs. Wadleigh, Mr. and Mrs. Binley, Walter Humphreys, Charles H. Eames, and your Secretary. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

1898

The new Secretary makes his initial bow by thanking the Class for the large amount of material sent in for the notes. There is enough for several months. Keep it coming!

A goodly '98 representation attended the Alumni Day festivities in June. At the luncheon in the Great Court were present Arthur and Jean Blanchard, George Cottle, Edward and Marion Chapin, Lester and Margaret Gardner and George and Elsie Treat. The coming 50th was, of course, the main subject of conversation. This was continued in the evening at the Alumni Banquet held in the Hotel Statler, which was attended by Arthur Blanchard, Elliott Barker, Ed Chapin, Fred Dawes, and Lester and Margaret Gardner.

It is good, in a way, to be both secretary and class agent, for then the boys begin to think of you doubly. This results in delightful letters and surprise visits. George Anthony called en route from Maine to Michigan, as described in the July Review. Plan to make a longer call next time, George! Elliott Barker, who lives in Arlington, Mass., came in for a luncheon conference about the 50th. About time for a repeat, Elliott? Arthur Blanchard drove in from Brookline last June, and we had a walk in the Arnold Arboretum of Jamaica Plain. We are both interested in trees, shrubs, and flowers, of which the Arboretum is a continuous and changing exhibition. Dan Edgerly, on East from Chicago during the summer, called at my apartment. He had been over to M.I.T., looking up data about tellurium and the periodic system of elements. As most Course V students and many of his friends know, he worked on tellurium for his master's degree. We got out Hubbard's "Periodic Chart of the Atoms" and had a grand time with the elements, atomic weights and numbers, fissionable elements, uranium, plutonium, and of course, titanium, which has been Dan's baby for years with the Titanium Pigment Corporation. The next day he called at the office with pictures descriptive of his recent trip to Mexico, among them views of the Paricutin volcano, both from a distance and near to. After a pleasant luncheon he departed, promising to send some material about titanium. Man, does he keep his promises, 400 per cent! Enough material, all intensely interesting, for a whole issue of The Review. Thanks, Dan!

Letters. Did I say letters? Yes, an avalanche of them. Fortunately, they came one to three at a time, so that I was able to enjoy them, and you will too. Bless their hearts, some sent material interesting enough and sufficient to justify taking a whole issue of class notes. The Secretary will have to adopt the policy enunciated by Sir Harry Lauder, to whom he listened with pleasure in London 25 years ago. Being pressed by a tumultuous audience to sing favorite songs, Sir Harry replied, "Why, if I sing all my songs this nicht, thou'll not come another nicht." So we will publish a few letters this month, approximately in chronological order, and follow on in subsequent months. But don't let anyone get the idea that there is no need for any more letters. There are nine issues of The Review every year. So those of you who have not yet written, kindly get out the typewriter or the old fountain pen and send along a letter. Thanks!

Milan V. Ayres, 5401 Woodlawn Avenue, Chicago, Ill., writes as follows: "In response to your note, I am giving below a few items of possible interest about myself. War record — Spanish American War: I tried to get into both Army and Navy but was rejected because of eyesight (myopia). Then, soon after graduation, I got a job as 'electrical machinist' at the Brooklyn Navy Yard, which I held for the duration (only a few months). World War I: I was a major in the statistics branch of the General Staff, from 1918 to 1920, spending the whole time in the War and Navy Building at Washington. World War II: Although I held a commission in the Officers Reserve Corps, I was denied active service because I was too old. So for a while (as a civilian) I taught radio to soldiers of the Army Air Forces. After that I obtained employment with the 'Metallurgical Laboratory of the University of Chicago' which was, in fact, an agency of the 'Manhattan District of the Corps of Engineers, Army Service Forces.' In other words, I was one of many engaged in the research which culminated in the atomic bomb (beginning November 1, 1943). I am still with the same organization, which is now known as the Argonne National Laboratory. We are now working on the problem of obtaining electrical energy from atomic fission for general power purposes. I am the author of a new book, *Instalment Mathematics Handbook*, published last June by the Ronald Press Company. It contains nearly 300 pages, and of course I think well of it. One qualified commentator said of it, 'Anyone having anything to do with consumer credit should make this book his Bible.' Another equally qualified, on hearing that comment, said, 'I concur.'" Congratulations, Milan!

Willis L. Learned, 100 Fort Street, Fairhaven, Mass., writes the following: "Don't let this brief note from me upset your daily routine, as this is the first time in many years that I have written to a member of '98. From 1918 to 1943, I was an inspector with the Associated Factory Mutual Fire Insurance Companies, visiting many of the principal industrial plants in all states east of the Mississippi River. I retired in the summer of 1943 to get acquainted with my wife and family. I have a granddaughter 12 years old and a grandson 11 years old. I have no particular hobby but like to tinker at carpentry, painting, and gardening, and manage to keep quite busy doing odd jobs about the house and yard. I have kept in touch with the Institute through the Technology Club of New Bedford, of which I am a member, and The Review, which I enjoy very much. I am looking forward to our 50th reunion and hope to attend." The Secretary just relishes being upset by a newsy letter like this. See you at the 50th, Willis, and perhaps before.

Charlie Winslow, on paper headed "Historical Library, Yale University School of Medicine," writes as follows: "Your letter reached me while I was on vacation in Maine. I am glad to know you are a walker. We spend all our time here at Mount Desert in climbing the hills and following the trails. I think it is fine of you to have taken over the class secretaryship. I was retired from my teaching duties at Yale a year ago but, like you, have been working harder than ever. I am editing the *American Journal of Public Health* and carrying on a program for the official accrediting of the schools of public health in the United States and Canada and have just finished an extensive health survey of the metropolitan area of Washington, D. C. Also, I have two books to get out of my system. It may amuse some of my classmates to know that I have achieved real professional standing as an honorary member of the Connecticut Society of Civil Engineers! But there is, in truth, a solidity and an honesty about the engineering mind that makes engineers as a group the most congenial society I know. With all good wishes for the 50th reunion . . ." We are always glad to hear from our former Class President.

Other letters will be published in later issues of The Review, and here are the previews: Dave Fenner writes that he has not yet recovered from his 50th at New Haven in the latter part of June, 1946, where he was chairman of the reunion committee. We are counting on your experience and energy, Dave, for your 50th from M.I.T. — Lester Gardner, major, doctor, and chairman of the board, active and creative, has responded with characteristic, generous, and enthusiastic interest in '98 affairs. The astonishing achievements of our distinguished classmate in the field of aeronautics are summed up in an editorial appearing in the August number of the *Aeronautical Review*. — Clarence Goldsmith — I should say, Colonel Goldsmith — has served with distinction in World War II. He was associated with the War Department for four years as a fire insurance engineer, assisting in the prevention of fires and to conserve lives and material, and in the course of the discharge of duty traveled 110,242 miles. — F. A. Jones is busy in his work, which he enjoys, and has elected not to retire for a while. — Howard Bodwell retired from the steel business in 1941, was recalled for the duration, and since March has retired permanently. He is now living in La Jolla, Calif., and is looking forward to attending the 50th. The Alumni Fund is tripping along merrily. The '98 figures, as of September 16, are 54 contributions amounting to $1,125.15. — EDWARD S. CHAPIN, *Secretary*, 114 Federal Street, Boston 10, Mass.

1899

Your Secretary attended the first alumni reunion to be held since the war started, driving from Albany, N.Y., via the Molly Stark Trail, to Boston. At Brattleboro he finally located George Heywood Priest way up on the hillside above the city. Although we two haven't seen each other since commencement 47 years ago, George

called me by name, and I would have recognized him if I'd met him in a crowd. Dressed in overalls, he was doing a very efficient job of building a garage. His home, as modern as any recently constructed city home and largely built by his own hands, shows a Tech man's versatility! We had a grand visit until it was necessary for me to leave to get to the dinner given annually by President Compton to honorary secretaries.

The following day was Class Day. Present at the luncheon were these men: Hervey Skinner, Miles Sherrill, Arthur Brown, and Burt Rickards. At the Alumni Dinner the above mentioned Old Guard appeared, augmented by Jim Ellery, Percy Witherell, William Kinsman, and Ralph Loud. — Burt R. Rickards, *Secretary*, 381 State Street, Albany, N.Y. Arthur H. Brown, *Assistant Secretary*, 53 State Street, Boston 9, Mass.

1900

This Class had a quite representative gathering on Alumni Day last June. The members present at the lunch on the lawn were Mr. and Mrs. Charles A. Newhall, Mr. and Mrs. Charles E. Smith and Junior, Fitch, Clarence Brown, Jackson Pickersgill, Silverman, Ziegler, Patch, Russell, the Secretary; and about the same people, with the addition of Neall, turned out for the banquet in the evening. An innovation this year was a class meeting at five o'clock in one of the Statler rooms, and it was voted a very enjoyable way to spend the time before the banquet. Considerable business was transacted. Wastcoat had made all plans to attend the festivities, but a consultation of medics on that day prevented it. Since then, Dick has been under the care of three nurses, but recent news from his home is that he is about to leave his bed for a convalescent period. On a flying trip to the Cape in June, we looked in on Crowell, and he was a bit under the weather from what appeared to be that tired feeling. Louis promised to be his old self by fall. George Russell has been spending some time this summer in the hospital but is now on the mend.

It seems to most of us that George Mead is doing a little more than his share toward helping out his country, and his last appointment as a member of the O.P.A. Decontrol Board prompted that prince of good class secretaries, Denison of 1911, to write as follows: "Yesterday's lead story in the Sunday *Telegram* [Worcester] brought back to me pleasant memories of the yearly trips I used to make to Dayton, Ohio, in the mid-Twenties as executive secretary of the Alumni Association — for there was one of Dayton's leading lights, George H. Mead '00. He had always been very cordial and friendly on my trips, and I believe he's a good choice (Truman evidently has a sound idea occasionally!) . . ."

The downtown luncheon established this summer at the clubroom at Thompson Spa, 239 Washington Street, is well on the way to popularity, and all class members are cordially invited to attend and sit with the gang or at the small tables.

Who should show up in the Sanctum the first of July but our friend Hapgood, with a very definite idea about the purchase at retail of a certain well-known brand. That formality taken care of satisfactorily, Happy began to tell of his more recent history. With Edith, he is spending the summer at his brother's apartment on Beacon Street, and we made plans for many trips. They intend to return in the fall to Lake Worth, Fla., for the winter. Cyrus was on top of the world and left best wishes for all classmates.

Now here is something of interest to those of us who are casting longing eyes toward Florida. In July's mail comes a letter from Osgood, which follows: "Notice of change of address: H. E. Osgood, 535 Gulf Stream Avenue, Sarasota, Fla. I have gone deeper into the South in order to get farther away from the strike-ridden North. Farming in Virginia had become too strenuous — no help, hard work, and more of it. Work and I have nothing in common. I am ready to do 'most anything that doesn't involve work. Believing that many like to visit Florida and spend their cash, I have taken over a place on the Gulf in order to relieve tourists of part of their burden. This hostel will be strictly private and exclusive as far as a lazy, aged farmer-engineer can make it. My son is more progressive and is thinking in terms of money. Having nothing, I am unconcerned about acquiring more. Food and drink should be dispensed with, because of the labor involved, however I have decided to keep on eating. Best of luck and good wishes."

Ziegler called at the hospital to see the scribe the other day, and Fitch came out to call shortly afterwards, two very kind and thoughtful friends. — C. Burton Cotting, *Secretary*, 111 Devonshire Street, Boston 9, Mass.

1901

Unfortunately, the special delivery letter containing the manuscript of the class notes and newspaper clippings intended for the November issue of The Review, which I sent to my home in New York City to be typed, has been lost in the mails. It is now too late to duplicate these class notes in time for them to appear in the November issue, but we will rewrite the manuscript and try to get duplicates of the clippings so that they may be used in the December issue. — Guy C. Peterson, *Secretary*, 788 Riverside Drive, New York 32, N.Y. Theodore H. Taft, *Assistant Secretary*, Room 3–266, M.I.T., Cambridge 39, Mass.

1903

Thirteen members of the Class attended either luncheon or dinner or both on June 8, the first old-time Alumni Day since the pre-war era: namely, Aldrich, Myron Clark, Danforth, Denham, Gould, George Greene, Peaslee, and the Secretaries, besides Ferry, Low, Morse, and Welsh, who were accompanied by their wives.

In addition, letters were received from Hewitt Crosby, Potter, Millard, Lounsbury, Chase, and others, expressing regret at not being able to attend. The afternoon was hot, and there was a severe electrical storm in the evening, but neither affected the good time that we had getting reacquainted, comparing notes, and enjoying the fellowship of good fellows together.

Crosby writes that after four years in the Navy he retired under orders at the end of the war to take it easy. He is doing that by converting a farm at Thurmont, Md., into a comfortable year-round home. He invites any of the Class driving through to stop off and see him. He also states that only a few miles away from him lives Philip Rice, who has retired from farming and is doing consulting work. Millard, II, for many years with Fort Pitt Bridge Works, has recently been re-elected to its board of directors. During World War I, he was works manager of the McClintic Marshall Corporation plant at Leetsdale, Pa. He retired about 1930 but was called back to be works manager of the Fort Pitt Bridge Works plant at Canonsburg for four years during World War II. In this time he was responsible for the production of nearly 100,000 tons of bulkhead plates, which went into about two hundred oil tankers.

In appreciation of Andrey A. Potter, VI, of Purdue, the *Purdue Engineer* has gotten out a complete number dedicated to him. All the heads of courses write in tribute to him, and he was presented with the Silver Book, "a compilation of all the congratulatory letters and telegrams received on the completion of his 25th year at Purdue." Potter has been at Purdue as dean of engineering and for a time as acting president, for 25 years. He has apparently done a grand piece of work, gained nationwide recognition of his ability, and endeared himself to his colleagues and students. He is probably one of the most successful men of the Class, one of whom we may all be proud.

We have just received word of the death of George C. Danforth in Augusta, Maine, on June 30 and of Walter M. Drury in New York City on July 16. Danforth was with us in June at the reunion. — Frederic A. Eustis, *Secretary*, 131 State Street, Boston 9, Mass. James A. Cushman, *Assistant Secretary*, 441 Stuart Street, Boston 16, Mass.

1905

"Blue Skies Smiling at You," that is, if you attended the 41st reunion at East Bay Lodge on June 21, 22, and 23. If you didn't, you missed one of the best. The weatherman kept his promise to the reunion committee, for the weather was perfect on all three days. Twenty-five men and 15 wives were present, including Bill and Peggy Ball, Ed and Isa Barrier, Joe Brown, Henry Buff, Harry Donald, Bert and Alice Files, Jim and Helen Fouhy, Wesley and Bertha Gilman, Fred and Ruth Goldthwait, Percy and Mildred Goodale, Carl and Betty Graesser, Theodore Green, Ralph and Grace Hadley, Carl Houck, Roy and Andrea Lovejoy, Bob McLean, Al Prescott, Louis and Sophie Robbe, Sam Shapira, Henry and Mildred Stevenson, Sid Strickland, Gib and Elizabeth Tower, Casey and Helen Turner, and Frank Webster. On Sunday, Pete and Wilda Harvey arrived, having driven from Chicago too late for most of the big doings.

Host Leghorn had done his prettiest to entertain, the grounds were beautiful, the food — well, when in the midst of one of the most difficult periods for finding provisions the general verdict was "wonderful," it must have been wonderful, and it was. Twenty-five were present for dinner, after which the customary indoor sports were indulged in — reminiscence, catching up on old times, inspection of old class records, "Techniques," photographs, and

so on. Betty Graesser seemed to be mistress of ceremonies at an old game, "Kelly," played with a bar, balls, and barriers, a game something like golf, but with several innings at intervals during the three days. Evidently Kelly was very amusing. Under the heading of indoor sports came the cribbage championship, in which Bob McLean, a so-called champion of Pocassett and Bridgewater, had the temerity to challenge your Secretary, the acknowledged champion of Melrose, Mass., and Lake Winnepesaukee. Needless to say, Bob lost, but out of sympathy was allowed a return engagement the following day, at which time he won, claimed, and was allowed, the class championship. However, mine host called our attention to the fact that on account of the Cape Cod Sunday blue laws, stakes won on that day are voided, which apparently leaves your Secretary still champion.

On Saturday came the golf match between '05 and '26. Neither side could muster more than two pairs, so Ball and Goodale played the '26 champions, and Sid Strickland and Goldthwait took on the other pair in a consolation match. Bill and Percy won their match handily, Bill having the very creditable score of 84. Sid did mighty well in his match, but his partner was too much of a handicap, and we lost, one down. In the evening the victors very graciously took over to the Wianno Club, headquarters of '26, the beautiful loving cup, which they had had engraved in expectation of bowing to the prowess of these youngsters, 21 years our juniors. Bathing was indulged in by the more hardy members, but someone picked out a mud flat, and the party ended by pulling Peggy Ball out of the mud with the loss of her bathing slipper. Another outdoor sport was concrete busting, which Ed Barrier won, after a bad battering of the cement bordering the narrow driveways. Ed succeeded in stripping considerable trim off his car, which made it look a bit more like the average car of today.

Our host had prepared "something special" for our Saturday dinner, with the head table beautifully decorated with flowers and '05 banners. Carl Graesser proceeded to show Green and Houck, who apparently had never tackled broiled live lobsters, how to get inside the creatures. Perhaps Carl had previously met and vanquished lobsters, but he succeeded in cutting his lip, whereas his pupils escaped without injury. After dinner speeches were made by Carl Grymeko Graesser, Casey Turner and Betty. The toastmaster allowed the speakers considerable freedom in the discussion, which seemed to be on the point of order, but ended in the election of the 1947 reunion committee, with Graesser, chairman, and Bert Files and Percy Goodale, workers.

Louis Robbe then advanced to the rostrum and, after reminding us that the sands were running through, presented to the class his "Technique," his class cane and his pipe, a very gracious act and an addition to our trophy room. Louis had with him a very attractive and elaborate brochure, presented to him by his colleagues in the board of transportation of the City of New York, from which he was recently retired on pension. Colonel Louis planned to spend some of his spare time in traveling, exercising his hobby of photography, and so forth; but we have since learned that he spent several weeks recuperating from an operation, not serious, we are glad to say.

On Sunday the camera and movie men took over, using much time and patience in assembling groups, consuming a lot of film and receiving plenty of constructive criticism from the subjects. Louis Robbe, as the hold-over chairman of last year's reunion, has been assembling the results and preparing lots for distribution, also a composite film for future reunions. Your Secretary and Ruth had the pleasure of attending a dinner party given by the Stevensons and Hadleys at Andover (Mass.) on September 14, at which Ralph Hadley showed the film he had taken. It was remarkably good and will be added to the collection. Ralph, by the way, appeared at East Bay Lodge on crutches, having dropped a lathe (or something) on his foot shortly before. You should have seen his films showing an Essex County tennis championship recently played at Andover. You never would have believed either that he had had an accident or that he had passed 40. The balance of Sunday was spent in consuming two more fine meals, in bidding adieus, and in planning to double the attendance in 1947. Betty Graesser had piloted a party to Popponesset Beach and came back with a great boost for Popponesset for 1947.

Many regrets were received from those who could not attend. Bill Motter had planned up to the last minute to maintain his record of attendance, but a sudden indisposition had then kept him away. A daughter's marriage kept Dave Bridges from coming; sickness was Carl Danforth's handicap; arrival home of a daughter and grandchildren prevented Grove Marcy; and a reunion of three sons just home from the service, kept Harry Wentworth in Newton. Lovell Parker, who won the verbal golf championship in 1945 and had promised to attend in 1946 "if on the Cape," had a crucial tax session in Washington, and it almost broke his heart because he "was born in Osterville, you know." The reunion of a home-coming daughter and two sons and a "reorganization of our W.A.A." (Women's Athletic Association?) grounded Bill Tufts.

Commencement at Wesleyan prevented Ros Davis from coming. Ros was in Boston just after the reunion, hunting for 600 mattresses to take care of their immediate overload. He got 'em. You should hear Ros tell about being suddenly commandeered (from his position as treasurer) to teach a course in descriptive geometry. He dug out his "plates," which had been in moth balls for 41 years and "didn't know what the d—— things meant." Jack Flynn had planned early to leave Argentine in plenty of time for the reunion, but the grounding of planes and other complications prevented his arrival in Boston in time. Jack is very ruddy and rotund.

At Alumni Day, which preceded the reunion, were seen Babcock, Balkam, Buff, Chesterman, Fisher, Guibord, Doc Lewis, and McLean. Attending the Alumni Dinner were Babcock, Buff, Chesterman, McLean, and Goldthwait.

Charles B. Rhodes, VI, died on March 30, at his home at Hermosa Beach, Calif. We had heard little of Charles since 1915, when he was with the Seattle Dry Dock and Shipbuilding Company. His recent years were spent around Los Angeles. — Fred W. Goldthwait, *Secretary*, 274 Franklin Street, Boston 10, Mass. Sidney T. Strickland, *Assistant Secretary*, 71 Newbury Street, Boston 16, Mass.

1907

From a clipping from the New York *Times* received through the co-operation of Dick Woodbridge and Frank MacGregor of our Class, I learned of the death of Harold Street Wilkins, Colonel, U.S.A., retired, on June 16. Wilkins was a graduate in Mechanical Engineering. From 1907 to 1910, he was assistant to the master mechanic at Republic Iron and Steel Company, then served for two years as assistant in physics at Technology, four years as instructor in the same subject at Phillips Andover Academy, in 1917 was commissioned a first lieutenant in the ordnance division of the Army, and in 1920 received a permanent commission as captain. Subsequently, he organized the Baltimore, Md., Ordnance District, and from 1928 to 1932 was in charge of the small arms section, technica taff, Office of the Chief of Ordnance. From 1932 to 1938 he was stationed at the Augusta, Ga., Arsenal, and from then until his retirement in 1943, was chief of the inspection division of the Picatinny Arsenal at Dover, N.J. He established and operated the inspection school there which trained more than 3,000 inspectors for all the ordnance districts. He did not marry until 1943 and is now survived by his widow, Mrs. Eleanor Lawrence Wilkins. During the last three years, his address was 923 Florence Street, Aiken, S.C.

Early in June I received from a Miss Frances F. Biggs of Cincinnati, Ohio, a note that read in part as follows: "I am enclosing a notice of the death of Stuart Miller. He died on the 20th of May after an illness of six weeks. He had not been well for a long time and was almost blind. . . . For a number of years I, his aunt, read the 1907 notes to him." Stuart Read Miller was a graduate in Course II. He had worked for various firms in either purchasing or selling, and since 1921 had been in charge of packaging and printing with the William S. Merrell Company of Cincinnati, America's oldest pharmaceutical manufacturer. He was formerly president of the Technology Club of Cincinnati, was also active in the affairs of the Sons of the American Revolution and of the Society of Colonial Wars in the state of Ohio; also in church work with the Episcopalian churches of Cincinnati. His only family survivor is his aunt.

From the Register of Former Students, I learned of the death of John Tetlow on July 8. John was quite active in our class affairs during undergraduate days, took the Course in Chemical Engineering, but was not graduated. Only once since 1907 have I heard from him directly, and that was in 1918. I can say, however, that at various times he was production manager for the Builders Iron Foundry, foreman with the American Locomotive Company, production manager for the Blount Engineering Company, and with the Hyatt Roller Bearing Company. In 1937, I learned

of his being superintendent of the United States Naval Ordnance Plant at Baldwin, Long Island, N.Y. His most recent address, at the time of his death, was Box 762, Massapequa, Long Island, N.Y. So far as I know, he never married.

In the Boston *Herald* of July 18, under the heading, "Other Deaths," I noticed the name of Starr Truscott, "noted aeronautical engineer, in Hampton, Va." Recognizing the name as that of an '07 man, I wrote to the postmaster at Hampton asking whether he could send me a newspaper clipping about the deceased, and he very promptly and courteously responded. I quote in part from the clipping received: "Starr Truscott, 60, chief of the hydrodynamics research division at the Langley laboratory of the National Advisory Committee for Aeronautics died unexpectedly on July 17 at his home at 155 Beach Road, Fox Hill. A resident of the Peninsula for nearly seventeen years, he was one of the nation's ranking authorities on the design of seaplanes and a world-leading designer and exponent of high-speed towing basins for aerodynamic and hydrodynamic research. . . . A native of Cleveland, and a descendant of the original Starr family that landed at Plymouth Rock, he is survived by his wife, two sons, Corporal Starr, Jr., and Francis Drake, and two daughters, Katherine Noel and Nancy. . . . He attended . . . Technology for a year, and was graduated from the University of Michigan in the class of 1909 with a degree of bachelor of science in naval architecture. After his graduation he became associated with the Newport News Shipbuilding and Dry Dock Company. In 1913 he went to Panama, where he designed the lock caissons for the Panama Canal as well as the first bridge over the canal. In World War I he was chief engineer to the joint Army-Navy airship board and in 1921 was named assistant for lighter-than-air craft for the naval bureau of aeronautics. He assisted in the designing of the dirigibles Shenandoah, Akron, and Macon and left the Navy in 1926 to become associated with the NACA staff in Washington. He came to Langley Field in 1929, where his first job was the design of the first high-speed towing basin to be used for the testing of hulls and floats of seaplanes and flying boats. He gained world renown for his work and in 1936 was invited to Germany, where he spoke before the annual meeting of the Lilienthal Society. . . . He was chairman of various war loan, Red Cross, and community chest campaigns at Hampton, past president of Hampton Rotary Club, Fox Hill Parent Teacher Association, Hampton Rifle Club. In addition, he was associated with many national societies. . . ."

From the Meriden, Conn., *Record* of June 27 we excerpt the following: "Howard Marvin was guest of honor last night at a farewell banquet at Long Hill Inn, Wallingford. For the past five years he has been consulting industrial engineer for the Cuno Engineering Corporation. He has now been assigned to other projects by his home office and will leave Meriden at the end of this month. The high regard that Cuno employees have for Mr. Marvin was exhibited by attendance of key men and the presentation of a special gift." Howard is a member of the firm Stevenson, Jordan and Harrison, Inc., industrial engineers, of New York. You men who attended our class reunion at Oyster Harbors in 1942 will remember that Howard was there — his first appearance at one of our gatherings. We shall hope to see him again at the same place in June of 1947. — A clipping received from Carl Trauerman, taken from the Montana *Standard* (published at Butte) of June 1, tells of the appointment of Roland H. Willcomb as administrative aid and secretary to the Montana state highway commission. Carl himself is secretary-manager of the Mining Association of Montana.

On July 1, Ed Moreland became executive vice-president of the Institute, relinquishing his duties as dean of engineering, a position that he had occupied since 1938. In his new post he serves as part-time consultant with Dr. Compton on government related matters and on the co-ordination of the various sponsored research programs of the Institute. He also assists in the planning and installation of new facilities and in the revision of facilities to accommodate the enlarged program of research and education. He will also be able to devote more time than in the past several years to the work of the engineering firm of Jackson and Moreland, of which he is senior partner. — On June 21, the partnership formerly conducted under the name of J. R. Worcester and Company, of Boston, one of the partners having been Gilbert Small of our Class, was dissolved. Gilbert is now operating the engineering firm of Gilbert Small and Company, Inc., having associated with him three men previously with the old partnership. His office is at 10 State Street, Boston. — Last June, after receiving notice of a new address, 121 Belknap Street, Dover, N.H., for our classmate, Morris A. Stewart, I wrote to him and in reply received this note: "I retired as a patent examiner in the patent office in Washington, D.C., a little more than a year ago, after about 36 years of service in that capacity, and returned to my old home in Dover, which will be my permanent or standard post-office address, as far as I now know. I have been working day and night for some time trying to repair and renovate a house and grounds, since it is nearly impossible to obtain painters or other mechanics. I am now classified as 'unemployed,' but am far from it in so far as working is concerned. In fact, the traveling to new fields, which I had expected to do soon after retirement, has had to be postponed."

Here's one of John Frank's little notes, dated July 16 and typical of those I frequently receive from him: "Our gang held a little warm-up reunion last week at John West's house at Falmouth, Mass. Present were Sam Marx, Stud Leavell, Molly Scharff '09, Harry Rapelye, John West, and I. We naturally spoke a lot about the coming reunion of our Class next spring at Oyster Harbors, meanwhile enjoying the beauties of Cape Cod."

Professor Charles E Locke '96 thoughtfully sent me a clipping from the Brookline, Mass., *Citizen* of August 15, which is quite a long story about William G. Perry, of our Class and a resident of Brookline. Perry is a founding member of the firm of Perry, Shaw and Hepburn, architects, of Boston. Among important educational structures to his credit are the Roxbury Latin School building, the Radcliffe College lecture hall, the Houghton Library for rare books at Harvard, and St. Paul's church and parish house in Newburyport, Mass. He recently received an assignment from the Bulova Watch Company in Woodside, Long Island, to design an industrial school for disabled veterans for the training of students in watchmaking, with libraries, clinics, gardens, and gymnasium. His outstanding accomplishment, however, in the field of architecture has been his restoration of Williamsburg, Va., to an exact replica of the original city, a commission assigned to him by John D. Rockefeller, Jr. In 1935 he began the vast amount of research and investigation necessary to do this job properly, with the result that today Williamsburg represents a pure early root of American colonial architecture in Virginia. The restoration is not yet complete. Often some new item is discovered that adds to the authenticity of the city. Perry has made this project a part of his life. For years he spent most of his time there and even now does not like to be away for long. When possible, he takes time out for horseback riding, camping, fishing, and hunting. He has three children. William was graduated from Harvard and is now director of the bureau of supervisors there. Eleanor, now Mrs. Edwards R. Baird, Jr., of Norfolk, Va., was graduated from Smith College. Louise, the youngest, finished at Bennington College in June.

Very few of our fellows showed up at the Alumni Day dinner on June 8 at the Hotel Statler in Boston — Don Robbins, with his wife, George and Mrs. Crane, Clinton Barker, Arthur Christensen from Beaufort, S.C., whose wife was attending a Smith College reunion, Phil Walker, and Bryant Nichols. We saw Ralph Hudson during the day on the Institute grounds but he did not attend the dinner. — Just a closing word regarding the Alumni Fund contributions from you men of '07. As I am writing these notes on September 14, 101 class givers have contributed $3,114.19 which is a fine showing, but we can and should do better. There are 21 of you who gave for the 1945–1946 Fund who have not yet sent in your checks for this present fiscal year. If *you* are one of these, won't you mail your check now, please? I am still hoping that '07 gifts for this year will reach $4,000. — Bryant Nichols, *Secretary*, 23 Leland Road, Whitinsville, Mass. Harold S. Wonson, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

The Class was well represented at Alumni Day on June 8. At the luncheon in Du Pont Court, we had Mr. and Mrs. Jimmie Burch, Doc Leslie, Mr. and Mrs. Henry Sewell, Mr. and Mrs. George Freethy, Mr. and Mrs. Jim Moir of '20, Bill McAuliffe, Miles Sampson, and Nick Carter. Quite a few of us met at the University Club for cocktails before the banquet at the Statler. We nearly filled two tables at the banquet, as Harold Gurney, Cookie, Bill McAuliffe, Doc Leslie, Howard Luther, Mr. and Mrs. Gregory Dexter, Mr. and Mrs. George Freethy, Mr. and Mrs. Jimmie Burch, Mr. and Mrs. Henry Sewell, and Nick Carter were present.

Linc Mayo, our Treasurer, reports that as of June 30, the Class has a balance towards our 40th reunion of $435.37 with all bills paid. If there are any who have not paid their dues, Linc would be glad to hear from them.

Ralph Batchelder from Pasadena, Calif., dropped into my office in the latter part of June for a short call. He was in the East on business. He also saw Cookie. Hap Ellis' son Alex, Jr., who served as lieutenant in the 82nd Airborne Division during World War II, was discharged in January and returned to Yale when he received his degree in June. His engagement to Nancy Bush of Greenwich, Conn., was announced in August. Shriners in the Class will be glad to learn that Frank Towle and George Freethy crossed the hot sands at Aleppo Temple, Boston, on June 28. We understand that Harold Gurney decided not to settle in California and is planning to spend the winter in Florida instead. Charles A. Kraus, who received his doctor's degree with '08, retired from the faculty of Brown University in June. He was a former president of the American Chemical Society. Dr. Kraus has made unrivaled contributions to both pure and applied chemistry. During the war, he was one of the scientists associated with the Manhattan District, or atomic bomb project, of the United States Army. He also carried out investigations in his capacity of director of the Metcalf Research Laboratory at Brown University for various other government agencies, including the Naval Research Laboratory and the National Defense Research Committee.

We are sorry to report the death of Joseph Sinclair, which occurred last May 24 while he was on vacation in Canada; he was a world-known geologist and explorer and was connected with Union Carbide and Carbon Corporation; also that of Arthur E. Bremer, formerly connected with Charles W. Leavitt and Son, landscape engineers of New York City on June 26; and of Hal M. Radford at Berkeley, Calif., during the latter part of August. The following letter from George Whittle, 720 Phelan Building, San Francisco 2, Calif., will be of interest: "It is my sad duty to record the death of one of our '08 classmates, Hal M. Radford, V, an account of whose death appeared in the Berkeley *Gazette* of August 28 and is attached. Radford lived only a short distance from me, but I have never seen him. I looked him up once when I read of his being here, but he was not in, and I believe he never attended any of our alumni gatherings in San Francisco. I am hoping and planning to get back to our 40th reunion in 1948, and if I make it, it will be the first one since leaving the Institute. I have had an interesting experience during the last five months acting as honorary secretary and interviewing applicants for admission to M.I.T. So many returning servicemen from the Pacific who have their hearts set on getting to Technology have been in to see me. It is quite a competitive matter these days with some 4,000 applicants for admission as freshmen, compared with some 650 who can be accepted (in addition to some 250 former students returning as freshmen). It is a much more crowded institution than it was in the days when we were there."

Cookie reports that subscriptions to the 1946–1947 Alumni Fund are coming in, but he is still expecting more. If you have not sent in your check, please do. The first dinner and meeting of the 1946–1947 season will be held at Walker Memorial in Cambridge on Tuesday, November 12, at 6:00 P.M. We hope to show some interesting colored movies and Kodachromes. The usual notices will be sent out early in November. Make your plans to come and see the gang. — H. LESTON CARTER, *Secretary*, 60 Batterymarch, Boston 10, Mass.

1909

From Paul: I was lucky enough to be at Alumni Day in Cambridge on June 7 and 8. I had had an invitation from Dr. Compton to be his guest at a dinner that included the honorary secretaries and other admissions men. We had a perfectly scrumptious main course of broiled live lobster. It just happened that the pleasantest incident of the dinner was my seeing for the first time since 1909, I'm sure, my classmate George Gadsby, V. George came from Ohio and is now the chief executive of the Utah Light and Power Company, and I'm dead sure he can get no lobster dinner in Utah like the one we enjoyed at the Sheraton! George, I must add, is as good-looking as ever; and how he and many another of the Class keep their hair and good looks is something I'll not try to explain to anyone. I told George I had been toying with the hope of driving out to the Coast as soon as things were a bit more serene. And now a stop at Salt Lake City is on the agenda. George tells me he wants to show me some of his pet spots in the national parks near him. And I must not fail to tell you that in the middle of the dinner, George looked at his watch and told me he was taking a plane from Boston at midnight and was due at Salt Lake City the next afternoon at 1:40! Even now that seems unbelievable! Four-fifths of the way across the country in something like 14 hours, and on a commercial plane!

I jotted down those registered from our Class. Here they are: George Bowers, I, Chet Dawes, VI, and Muriel, Tom Desmond, I, and Alice, Bradley Dewey, X, and Mrs. Dewey, Delos Haynes, VI, and Mrs. Haynes, Frank Loud, VI, Ken May, VI, Tod Nisbet, I, and Mrs. Nisbet, Gardiner Perry, VI, Mrs. Perry, and son John, Art Shaw, I, Laurence Shaw, V, Dwight Sleeper, VI, Henry Spencer, II, Albert Thornley, II, and Mrs. Thornley, and the Class Secretary, V, a total of 23. As I look back, I think the high spots line up something like this: the dinghies in the Basin — dozens of them; Van Bush's ('16) address at the symposium at Walker on Saturday afternoon; Norman Padelford, Professor of International Relations, and what he had to say about present-day conditions; the delicious luncheon served outdoors in the Court, Saturday noon; the banquet, with some thirteen hundred being served, the biggest Technology affair ever and the perfect conclusion of a memorable Alumni Day!

These Tom Desmonds! Late in May, I had a letter from Tom inviting me to come to his estate at Balmville, near Newburgh up the Hudson, to a party. Tom said that he was showing some of his friends his arboretum. There were 499 trees and shrubs in the collection, and Tom expressed the hope that he might soon have all the native American trees and shrubs that are hardy in the Newburgh climate. The date was a Sunday, June 30. It was to be an all-day affair, and he was serving luncheon to his guests. He told me, also, that he was inviting Reg and Marion Jones and Mex and Helen Weill, as well as the Class Secretary. As luck would have it, I was a bit low just then and had to decline Tom's generous invitation. I was bitterly disappointed, too, since I have for many months cherished the hope that I might some day see Tom's baronial estate. But Mex was a noble pinch hitter. Here is a paragraph he sent me: "Helen and I spent a very pleasant day with Tom and Alice who were, as always, very genial hosts. We arrived shortly before noon and spent the rest of the morning meeting the other guests and inspecting the Desmonds' lovely home. After a delicious meal which was served on the grounds, Tom took us for a tour of his arboretum, describing the more important trees and shrubs, and gave us some idea as to the problem of making each one grow and take root. Such things as acid and alkaline soil, dry and damp earth, as well as many other considerations certainly make it an absorbing activity. Where Tom finds the time to give this his personal attention I do not know, but he has certainly done a wonderful job."

But that is not all, by any means, about our distinguished classmate. Tom acknowledged my note about my inability to be at his party by sending me a campaign circular issued by the Sullivan County Republican Committee (Sullivan County adjoins Orange County where Tom lives), proclaiming Tom's excellent qualifications as he enters the campaign to run for United States Senator from New York State. Tom indeed has many points in his favor, which are enumerated at length. I'll take off my hat to him as he enters this campaign, and I'm sure we all wish him well! I admire the campaign slogan: "Desmond Clicks for '46." And I must add that just the other day there was mention in the papers of Tom's being chairman of a committee of the New York State legislature to study nutrition among school children. From Balmville trees and shrubs to nutrition among school children and then campaigning for the United States Senate! There's a man for you! And in the July 5th number of *Science*, the official publication of the American Association for the Advancement of Science, "The new Desmond arboretum at Newburgh, New York, temporarily closed during the war period, will from now on be open again daily free of charge to interested visitors. . . ." And speaking of distinguished classmates, here is the report of the committee on the underwater atomic bomb test, and here is the name of Brad Dewey, X, on the committee. Dr. Compton was one of the signers also. — Just before Alumni Day, I (Paul) spent a few weeks with my sister in Detroit. My brother-in-law has been with the Albert Kahn organization for some 30 years, and naturally there were many magazines dealing with architecture in the home. I happened to look over the May *Architectural Forum*. A familiar name caught my eye — John Matthews Hatton, IV. Not till that moment did I know John's

middle name. He had designed a watchcase factory over on Long Island, and the layout was so good that it had been written up at length in the *Forum*. One of the striking details in his plan was an arrangement that was sure to cut down losses on the precious metals in dust and sweepings.

A post card from Chet Pope, X, in Stockholm, reports: "I am here on business after many plane trips through England, Holland, and Switzerland. It's a small world when flying. This is a city well worth seeing. . . ." We'll be interested to learn more of the trip when Chet returns to this country. — During the war, Charlie Johnson, IV, was contributing to the war effort at the Brunswick, Maine, Naval Air Station, having left his position as librarian at Putnam Valley, N.Y. (See the Review for February and April, 1945.) Brunswick is only a matter of 35 miles by road from the Isle of Springs, where the Review Secretary attempts to hibernate summers. During the past summer, he was delighted when Charlie called up and stated that he was able to drive over. We had a pleasant luncheon but unfortunately Charlie could not find time to go on an afternoon boat ride. The airport closed the first of September, and Charlie and his two dogs are returning to Putnam Valley. His son, who is just out of the service, is planning to be married shortly. After trying engineering, he decided that his field was literature, which he is planning to study at Northeastern this fall. — A new citizen reported in the Boston *Herald*, July 2, to Mr. and Mrs. George Byron Hanson (Josephine Esselen), of Swampscott, is a son, Peter Byron. His grandparents are Mr. and Mrs. (Henrietta Locke, V) Gustavus John Esselen. — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* MAURICE R. SCHARFF, 285 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1910

The 36th class reunion was held as scheduled, from June 5 to June 8, at Osterville on Cape Cod. Although there was not a large gathering of classmates, a most enjoyable time was experienced by those who did attend. Since it was necessary because of unavoidable circumstances, that the East Bay Lodge and the Osterville Manor share their hospitality, the married members of the Class, who brought their wives, stayed at the former, and those who came stag at the latter. The splitting of the party was not detrimental to having a good time as the two places are near one another. The weather was fine, and the get-togethers at the two locations gave each member a chance to reminisce, ask and answer questions.

Frank Bell was on hand from Texas and looked extremely well after his trying times as colonel of a construction regiment in Europe. He described many of his experiences and gave us firsthand descriptions of the actual conditions. There are few of us that could have emerged from the war as Frank saw it, in such fine physical condition. Harold Manson and Carl Sittinger were the golf addicts and in so far as the scores were concerned, Frank Bell and Cliff Waldo were the only ones who could tell, as they caddied, and they were noncommittal.

Captain Patch, who was retiring from the Navy, was with us for two days with his wife. The Captain entertained us one evening with colored moving pictures which he had taken on his return to this country from the Far East, where he was stationed. The pictures were extremely interesting and were of considerable significance inasmuch as the captain was in the regular Navy and had taken them but shortly before this country entered the war.

Harold Billings, Cliff Hield, and Stuart Snedden were with us on Friday and kept everyone on the move with their unbounded energy. Richard Bicknell came on from Tennessee, where he is now located. Others attending were Dud Clapp, Arthur Curtis, Carl Sittinger, and Cliff Waldo. The wives accompanying their husbands were Mrs. Clapp, Mrs. Patch, Mrs. Sittinger, Mrs. Curtis, and Mrs. Cleverdon.

A cocktail party for those classmates who were attending the Alumni Banquet at the Hotel Statler on June 8 preceded the banquet. Those who were at Osterville attended, together with George and Mrs. Lunt, Henry Elwell, Jack Babcock, Al and Mrs. Huckins, Andrew Fabens, Lawrence Chapman, Bob and Mrs. Burnett, Stuart Henderson, William Wallour, M. J. and Mrs. Turnbull, and Russell Hastings.

In July the plight of our classmate, Achilles Hadji-Savva, who is vice-director of the Thessalian Railway in Greece, was brought to my attention. Every classmate was sent a letter giving the details and a request for funds to help this 1910 man who has survived five years of a war in which his country was in between. The response has been very good, but I feel that a greater number of classmates should be included in the list of those who have helped. The following are excerpts from the letter received from Hadji-Savva upon receipt of the first relief sent to him by the Class by cable: "I am so vastly moved by your immense goodness that I am at a loss to find a fit way to express to you, and to all my former classmates, my deepest gratitude. May I also add that as soon as I had your letter, I fetched my senior portfolio and dwelt for long on your two photos in it, but I had no courage even to cry for joy, recollecting the good old days of young life on Boylston Street. During the long years of my service in Turkey, Egypt, and since 1920 in Greece, I always bore in mind that I had a sacred duty to fulfill towards our Institute in the scientific, but chiefly in the moral, field, and in my endeavor to honor my alma mater, I fought for my country's welfare during the war and just after the liberation, when I worked hard, with my over a thousand employees, to restore from its ruins our railway (permanent way and rolling stock), blown up by the retreating enemy. And yet, I cannot clearly understand why I should have deserved the display, by you and my old classmates, of such a deep interest in a man who has only done his duty; but overwhelmed as I am at this moment by your vast goodness, I cannot go on arguing in that way and shall have to limit myself to the sweet task of expressing to you and all my former classmates, my deepest gratitude." It is strange that with the number of letters I received in answer to the relief for Hadji-Savva, there were but one or two which included any news or information that could be used in the class notes.

The following is a clipping from the New York *Times* about the passing away of Thomas A. Roper: "Thomas A. Roper of Bridgeport, Conn., an industrial engineer, died in St. Joseph's Hospital, Hamilton, Ont., on . . . [August 1] after an automobile accident, according to word received here. . . . His age was 56. Born in Chicago, he received a B.S. degree from . . . Technology in 1910. During the first world war he was a liaison officer of the American forces attached to the British War Office. He received a British citation for bravery for his service. Mr. Roper, who was associated for several years with Chase Securities Corporation, leaves a widow, Mrs. Margaret Carr Roper, and two sisters, Miss Eleanor Roper of Brookfield, Mass., and Miss Julia Roper of Paris. . . ."

J. T. Whitney has been discharged from the Army with the rank of colonel. Before discharge he served as Army representative of the Army and Navy Munitions Assignments Board. He is now with the Civilian Production Administration and living in Washington, D.C. His twin daughters are attending Bradford Junior College in Bradford, Mass. Dick Fernandez is still with the Monsanto Chemical Company. He is president of the Everett, Mass., Rotary Club and attended the Atlantic City convention of Rotary International in June. I have received several other letters from classmates during the summer, but foreseeing the usual lack of notes during the winter months, I am holding these for later issues of The Review. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

1911

True to form, 1911 had 11 members at Alumni Day at the Institute the Saturday following our Memorial Day week-end reunion and also 11 at the banquet that evening — plus Jim Duffy's charming wife, Mildred, at both events. Good old Course VI won first honors with five at each, while Course I had five at Technology but only four at the Statler, with John Alter, IV, replacing Henry Dolliver, I, as the "eleventh juror." Those attending throughout were George Cumings, VI, Dennie, Jim Duffy, VI, Liv Ferris, VI, and Roger Loud, VI; Fred Harrington, I, Ban Hill, I, Al Wilson, I, and Aleck Yereance, I; and Jack Herlihy, II.

Boy, was it fine to see Bancroft Hill after nearly 20 years — Calvin Coolidge had a southern drawl compared to Ban's Yankee lingo. Honestly, it was just like settin' around the cracker barrel at the old country store, and Ban has a fine philosophy of life, too. He retired about a year ago after a very active career which culminated in the presidency of Baltimore's rapid transit system. He still does some consulting, but in general is "on his own" and liking it.

It also was nice that Liv Ferris of the Bell Telephone Labs in New York was able to get over for these events as partial compensation for having been unable to be at the reunion.

A few reunion highlights by Carl Richmond, I, co-keeper of the log with Jim Duffy follow: Surely Ralph Adams, II, and Dick Gould, XIII, tied and were easily first for youthful appearance, with jet black hair — and such hair! A tie also for those with least hair: George Cumings, VI, and Stan Hartshorn, X — the one seeming to have the least hair depending on whether you viewed them from fore or aft. Wes Seligman, III, led the golfers with a snappy 88 — the others being Hartshorn, X; Joe Gershberg, VI; Harry Tisdale, V; Lou Golden, VI; Minot Dennett, II, and Johnnie Scoville, IV. The golfing wives who braved the rains (and turned in good scores into the bargain) were Ottilie Cushman and Daisy Seligman. The fishing party did pretty well on its catch, with high scores going to Nat Seeley, II; George Cumings, VI; Roy MacPherson, II; and Frank Reid, guest of Paul Cushman. Leroy Fitzherbert, I, XI, and wife, Marj, claimed the largest number of grandchildren, six; Al Wilson, I, and his wife, Anita, coming second with five. Art Leary, XI, thought he had the youngest child, three, but Carl Richmond, I, challenged and appeared to win.

The Hollingsworth-Vose Glaziers brought over our top-ranking General, who paid such a fine tribute to the youngsters of 18 to 27 who really won the war. Kenney was most impressive in telling of the boy taking off on a bombing mission and urging on George: "Don't worry. It's in the bag!" Admiral de Florez, II, was superb in his follow-up of Kenney in rebuttal: "The only way to save (the lives of) such youngsters is by training." What a training Monk provided! Monk also made a big point in urging the seriousness of the big job of research we have ahead and compared our present position to that of a child left alone with a bottle of whiskey and a stick of dynamite.

Cap Besse, II, could have sold the whole output of Wamsutta sheets even without samples, but it was a sellers' market and he would take no orders. Roy MacPherson, II, announced he still had the same wife, Ina, and all agreed that she is the same charming girl of other reunions. Frank Osborn, III, won the grand prize for having come the greatest distance — he flew up from Potrerillos, Chile, where he and the Andes Copper Mining Company have been one and much the same for more years than some of us admit. Frank says we in America have the good will of the South American population "outside of the politicians" and that we should do everything possible to keep that good will. One of the ladies (perhaps the most important) had to telephone home on arrival, remembering she had left her electric iron "on." The call, fortunately, was in time!

It was surely heartening to hear from Don Stevens, II, our Class President, on August 1: "After being away from business for more than two months, I am now back in the harness (the Okonite Company, Passaic, N.J.) and hope to be regular from now on." Don's enforced rest, you remember, had prevented him from attending our reunion at Osterville.

Through the summer months word has come of the death of four classmates. June Adkinson, V, a staff member of Peter Bent Brigham Hospital in Brookline, died of congestive heart failure on May 31, 1944, I was advised by hospital officials after mail had been returned and I had requested a new address. Three years ago June attended one of our "Seven Come Eleven" class dinners at Walker Memorial, held each year on the 7th day of the 11th month and in the talk-around gave an interesting account of her career.

Allen Kimball, IV, professor and head of the department of architecture at Iowa State College, at Ames, Iowa, died suddenly on March 8. A graduate of the University of California in 1910, Kimball joined us in our senior year and received his S.B. degree in 1911 and his M.S. in 1912. He had been with Iowa State since 1914. In a biographical sketch, kindly sent me by his successor as department head, we find: "His students will remember him as a great and true friend — one who always found time, amidst his urgent duties, for the pleasant chat and genial smile which endeared him to so many. His love of beauty and his capacity to fire the imaginations of his students to greater heights of creative endeavor mark him as a teacher of the highest order. Allen Holmes Kimball was a gentleman possessing the very highest character and personal sense of honor."

Five days later, on March 13, Lee Etting, II, died in Glendale, Calif. No details were available.

George Watson, IV, retired building contractor and native of Dallas, Texas, died at his home in that city on July 31. Former head of the Watson Company, builders in his native city, George took over the management of the company in 1913, immediately after the death of his father. A year later he was elected president of the firm, which his father had organized in 1889. He left the company in 1931 to take an executive position with the Mosher Steel Company at Houston. During a trip East in mid-1936 he was able to drop in for a day at our glorious 25-year reunion at Manomet, and we were all delighted to be able to renew acquaintance with this fine chap, who had been in Tech Show during his sophomore year and later had been active in the Architectural Society and the Southern Club. During the war George was a project manager at a steel plant in Daingerfield, Texas, and later general manager of a Shreveport construction and building materials firm. He retired in 1944. He was a former regional director and charter member of the Associated General Contractors of America. Surviving him are his wife, three sons, and a grandson, also a brother.

Thanks to O. W. Stewart, I, a copy of the June 15th *Collier's* came to my attention, with an article entitled "Mr. Charm, of Washington" concerning W. Stuart Symington, former surplus property administrator and new appointee as assistant secretary of war for air. "Our interest in it," writes O. W., "is, of course, the rather extended reference to the Aluminum Company of America and I. W. Wilson, XIV, who is pictured as being head of a somewhat eleemosynary institution." Yes, I had to look it up, too! Describing a call Bunny Wilson made on Symington, the article relates that "it was I. W. Wilson, known as 'Chief,' vice-president of Alcoa." After a series of developments, the article relates that Bunny finally told Symington that the company had agreed "to release our patents to the RFC for such and such a fee," Symington replying: "Why not give us the patents for free?" "We'll never satisfy you," replied Bunny as he got up and left — but later that afternoon he called Symington by telephone. "Stuart," he said, "I guess you're right."

If you failed to read the feature article in the September *American Magazine* — "Weather, the New Super Weapon," by Rear Admiral Luis de Florez, II — put it immediately on your "must" list. In this thought-provoking and terror-inspiring article on the future possibility of manmade tidal waves and glaciers, onslaughts of disease germs and atomic dust, Monk predicts that "these terrifying weapons may spell man's doom unless we learn to make science serve humanity." In conclusion he says: "We have only begun to live in a world of unlimited science and technology and we dare not become too easily satisfied or we shall be second best in science and relegated quickly to a second rate power as a nation."

We were delighted to learn that Monk had received the honorary degree of Doctor of Engineering at Stevens Institute of Technology on June 22 and was commencement speaker to the graduating class. "If we would profit from our new discoveries," he told the graduates, "we must turn our attention to the weakest link in the chain of progress — man." He added that "there is no longer a limitation on the machine or the control of nature, for only the human being and his capabilities have now become, by comparison, the limiting factor." In closing he urged the graduates to add to their tools and keep them bright by use, that they may retain the ability to cope with the rapidly changing world before them and "help this world come of age."

Following a three months' trip through South America, Bob Haslam, X, Vice-president and director of the Standard Oil Company of New Jersey, predicted that oil from the Middle East will compete actively with Venezuelan oil in South American countries. Naming Argentina as already having made a sizable contract with an unidentified Middle Eastern source, Bob predicted that Brazil might also prove a market therefor, "but the principal Venezuelan markets will continue to be in South America and Western Europe, because Venezuelan oil can compete on a price basis with Middle Eastern oil, whether it be shipped directly from the Persian Gulf or piped to the Mediterranean and then shipped."

We had a good letter from Ned Hall, II — now Lieutenant Colonel Hall — in midsummer, enclosing belated class dues and stating: "I hope all went well at the reunion — and am sorry I couldn't be there, but at that time I was still in Frankfurt, or rather on my way back there from my second visit to Switzerland. After nearly two and a half years in the Office of the Chief of Engineers in Washington, I went to the European theatre of operations the last of February, 1945, flying from New York to Paris via Newfoundland and the Azores. I had only a few days in Paris, then proceeding to our procurement branch office in Brussels, where I was until January 2, in charge of procurement of Engineer supplies in Luxembourg, Belgium, and the Netherlands. (I met Dick Ranger one night

in Luxembourg.) After a few weeks in Paris, I went to Frankfurt, in charge of Engineer procurement in all countries outside of Germany (liberated, allied and neutral). I covered much ground in England, Belgium, Holland, Luxembourg, France, Germany, and Switzerland — a mighty interesting assignment, returning to the O.C.E. in Washington for a few days late in July, then to Fort Dix and home to 112 High street, Newburyport, Mass. I am on terminal leave until November 6. After that — what?"

I had a nice call here in Gardner in mid-June from B. Darrow, VI, and his wife, Florence, who drove East to get their daughter at the end of her year at Pine Manor School in Wellesley, and return to Akron. They were sorry they couldn't have tied this trip in with the reunion, they said. Their son, Jack, who commanded a landing ship for tanks in the war, plans to stay in the Navy. — We're proud to announce that Carl S. Ell, XI, President of Northeastern University, is one of the seven New England college presidents chosen to be trustees of Devens College, opening this fall at Fort Devens, Ayer, Mass., to provide college extension for veterans. Also, two 1911 men are included among the July appointees for departmental visiting committees at the Institute: Course II, Admiral de Florez, and Course III (Metallurgy), Rufe Zimmerman, IX. Both are for two-year terms. — Al Wilson, I, who, besides running his successful structural steel business, is consul for Sweden in Boston and Vice-president of the Cambridge Rotary Club, has been appointed chairman of the Cambridge division of the Salvation Army 1946–1947 Greater Boston Appeal for $1,000,000. And speaking of Rotary, Johnny Bigelow, IV, was re-elected secretary of the Marlboro Rotary Club, last June. — Alden V. Loud, younger son of Roger Loud, VI, and recently out of the Army, entered Technology in June. His older brother, Warren, a '42 graduate, is an instructor in the Department of Mathematics.

While at Northwestern University, Evanston, Ill., for a week in mid-August — and the weather was delightfully cool, thank you — attending this year's session of the National Institute for Commercial and Trade Association Executives, I was entertained one evening at a class dinner at the Union League Club in Chicago by Jim Duffy, VI; Ed Woodward, VI; and Paul Cushman, VI, who came up from Valparaiso, Ind. Bill Whitney, III, and Armand Peycke, II, had planned to attend, but at the last minute had to cancel their reservations. We made up in enthusiasm and enjoyment what we lacked in numbers.

Carl Richmond, I, is prime mover in a group that is making a fine effort to have an M.I.T. luncheon club in Boston. Since mid-July they have been conducting "a daily luncheon in a private room on the second floor (off the ladies' area) of Thompson's Spa, 239 Washington Street, with table service and the regular menu and prices — no membership, no dues — the room being reserved daily, Monday through Friday, for M.I.T. men and their invited guests." Carl urges that members of our Class make an effort to attend, particularly on the 1st, 11th and 21st — from 12:15 to 1:15 P.M. Good idea!

At the conclusion of nearly five months of the current Alumni Fund VII, we have reached 96 per cent of our quota of 116 subscribers, but with $2,167.50 are at but 78 per cent of our financial quota. This puts us fifth among all classes in percentage of subscribers, but eleventh in amount contributed — in fact our archrivals, 1912, have reached 80 per cent with an average contribution of $21.07 against our $18.68 average.

In early July, I pulled this parody on the "Field Artillery Song" at our Gardner Rotary Club — maybe it'll do as a tag to these notes: O.P.A., stay away, you've already had your day, / Let production keep rolling along! / People say, O.P.A., you were never meant to stay, / Let production keep rolling along! / As in days of yore, let's not forget the law, / "Supply and Demand" shall be our song; / And we sing today: "Away with O.P.A," / Let production keep rolling along!

In closing, a few address changes: Harry S. Alexander, II, R.D. No. 7, Meadville, Pa.; Joseph F. Harrington, VI, P. O. Box 419, Larchmont, N.Y.; Wesley T. Jones, II, Barco Manufacturing Company, 1801 Winnemac Avenue, Chicago 41, Ill.; Colonel C. Phillips Kerr, 5316 Locksley Avenue, Oakland 9, Calif.; Howard R. Schulze, IV, 44 East 52nd Street, New York 22, N.Y.

If you're in or near Cambridge on Thursday, November 7, plan to attend the "Seven Come Eleven" class dinner that evening in the Silver Room at Walker Memorial at six. — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1912

Elliot W. Tarr, VI, was good enough to telephone me last August and to have lunch with me. He is now located at 335 Broad Street, Red Bank, N.J., Apartment 32. After his three years in Ireland, England, and Scotland working on base and hospital construction, he was with the Oak Ridge project for two years. He will be glad to hear from anyone. — Martin C. Cherry, II, has been made secretary of the Granite State Fire Insurance Company with headquarters in Portsmouth, N.H. — Theo Hotard, IV, has been elected head of the Department of Public Property of New Orleans.

Dwight Wyman, II, was good enough to pay me a visit last week. He is now on terminal leave from the Navy, rating as a lieutenant commander. Dwight saw plenty of service in the Pacific, but has lately been in New Orleans. He is now located at 169 Matheson Road, Barrington, R.I. — Your Secretary is greatly pleased to know that Johnnie Noyes, II, has been elected regional vice-president of the American Unitarian Association, representing Dallas, Texas.

At the annual Class Day dinner at the Statler last June, the 1912 table included Jerry and Mrs. Hunsaker, Ed and Mrs. Holbrook, back from China, Mr. and Mrs. Buck Freedman, up from New Bedford, Larry Cummings, Paul Tyler, Erwin Schell, and your Secretary. — We regret to announce the death of Raymond Jarret on November 9, 1945. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown 72, Mass.

1913

Attending the Alumni dinner on June 8 were A. P. Smith, Eynon, Sage, Eichorn, Capen, and Brewster — all six accompanied by their respective wives — and Glancy, Weeks, Cameron, Wardwell, and Murdock. Most of us had gone to the late afternoon cocktail party given by the Brewsters at the Algonquin Club. There, the large room to ourselves was comfortable on a hot day. The drinks and the hors d'oeuvres were perfect, and it was hard to leave when we had to. The Brewsters, Bill and Ellen, were fine hosts, and we left much in their debt. The memories of this party helped us to bear the very hot and crowded banquet at the Statler.

From Charlie Locke'96 we have news about three of his former Course III men: C. Lalor Burdick has returned from a year's duties in Mexico City for E. I. du Pont de Nemours and Company and will head a special high-polymer committee to study and co-ordinate Du Pont research and manufacturing activities concerned with nylon, plastics, and similar polymeric compounds. In April, 1945, Dr. Burdick became chairman of the boards of Cia. Mexicana de Explosivos and du Pont, S. A., and went to Mexico. — The second: Dr. Compton reports that while in Melbourne, Australia, between the two atomic bomb tests, he had an interesting visit from L. H. Lemaire. He says that Lemaire, a brigadier, was inspector general for the Australian Army under General Blaney but suffered an attack from some tropical diseases so that at the time he visited Dr. Compton he was just out of the hospital but was in good spirits although still suffering from arthritis. His plans were to join in partnership with General Blaney in establishing a cattle ranch somewhere north of Melbourne. — The third: Alan H. Means, geologist, of Salt Lake City, died on June 15 at Los Angeles, at the age of 56. He was a veteran of both world wars.

Arthur Carpenter, X, had his picture in the August issue of *Textile World*. Arthur is manager of the testing laboratories of Goodrich at Akron and has been elected president of the American Society for Testing Materials. — Francis H. Achard, VI, a colonel, called at my office in July, for a nice visit. He was about to leave the Army, where he did training work in the Signal Corps. Hermann is really outstanding. He took his Ph.D. at New York University in 1942 and a wife last November. Before entering the Army, he was in charge of personnel and training for Consolidated Edison, in New York, and his work for his doctor's degree was along these lines. He is considering the idea of setting up his own office as a consultant in this field. Before driving on to New York, Hermann introduced me to Mrs. Achard, whom I found young, keen, and attractive. She, too, has done personnel work for a large company, and I am sure that they will enjoy life and work together.

Dave Nason always haunts me when writing class notes. He is our one-man political action committee in the matter of contributions to the Alumni Fund. I'll spare you the usual boring statistics, but not the reminder that we are lagging, and that our record is not so good as that of our contemporary classes. If you have dodged

this issue until now, please write a check today. Larry Hart points out emphatically that only about one-third of us is carrying the load, and we need new subscribers. You would be surprised what 50 subscriptions of $10 would do for us.

The Holyoke, Mass., *Transcript* of June 8, printed the following: "The marriage of Mrs. George W. Aldridge of Rochester, N.Y., to George A. Richter of Rochester, formerly of this city, will take place . . . at the home of Mr. and Mrs. Merrill Griswold of Marlborough St., Boston. The bride-elect, the former Edith Brooks Hunt of Cambridge, attended Radcliffe college. She has been a resident of Rochester for the past 20 years and has been prominent in social circles and charitable organizations there. Mr. Richter, who is the brother of Eugene Richter, Mrs. Archibald Fletcher, Mrs. H. G. Young and Mrs. Bertram D. Woodruff, all of this city, was born in Holyoke. A 1909 alumnus of Holyoke High School, he was graduated as a chemical engineer from . . . Technology in 1913. Thereafter he became associated with the Brown Co. of Berlin, N.H., and in 1941 became superintendent of the cellulose investigations for Eastman Kodak Co. in Rochester. The prospective bridegroom was a major in World War I and was active in World War II as consultant in the War Production Board, the Office of Scientific Research and Development, and the War Department. The couple will reside in Pittsford, N.Y."

Royal C. Taft, II, died on July 18 at his home in Brewster, Mass. He was 57 and a former Boston grain firm executive. He retired in 1942.

The *American Paint Journal* of February 18 contained the following article about Bob Bonney, X: "Robert D. Bonney, President of the New York Paint and Varnish Production Club, was born on August 18, 1892, in Wakefield, Mass. He received his B.S. degree in Chemical Engineering in 1913, from . . . Technology and completed graduate studies from that same institute in 1915. In that year he joined Bird and Son, East Walpole, Mass., where he remained until 1918, when he became chief chemist of the Congoleum Company, Marcus Hook, Pa. In 1924 to 1927, he served as chief chemist for Congoleum-Nairn, Inc., Philadelphia, becoming Director of Research in Kearney, N.J., for that concern in 1928. From 1934 to date, he has served as assistant manager of manufacturing. Mr. Bonney is quite active in professional and technical societies. He is a member of the American Technical Society, National Farm Chemurgic Council, Fellow, American Institute of Chemists, American Society for Testing Materials (has served on various committees of that organization since 1919), and the Philadelphia Paint and Varnish Production Club, serving as president in 1927. Mr. Bonney is author and co-author of various technical papers and committee reports. He holds numerous patents in the field of paint, varnish, adhesives, linoleum and floor coverings. His hobby is dirt farming; operating Green Haven Farm, Elkton, Md., specializing in registered Aberdeen-Angus beef cattle, and new and improved field crops. He was married to Flora Imogene Reed in 1914. They have three children and four grandchildren. Their residence is at 275 Forest Avenue, Glen Ridge, N.J." A very good pencil drawing at the top of the article showed Bob holding a large steer, against a background of a haystack and barn. — Frederick D. Murdock, *Secretary*, Murdock Webbing Company, Box 788, Pawtucket, R.I.

1914

When the crisp fall days return and it is time to resume the pleasant task of writing the class notes, it always seems a long way back to Alumni Day, an event which occurs too late to be reported in the final sprin; issue of The Review. This year brought a peacetime return to that pleasant June event, which was held on the eighth at the Institute. As there was an Alumni Banquet with the seniors as guests in February, the small June graduating class was not present at the June Alumni Day banquet at the Hotel Statler in Boston. This made it possible to entertain wives of Alumni at this event for the first time. Many, too, attended the noonday luncheon at the Institute. This Alumni Day has become a very pleasant opportunity to renew old acquaintances and to keep in contact with the Institute itself. It is hoped that an ever-increasing number of 1914 men will take part in future Alumni Days.

This year we did not hold any official preprandial meeting but several members of the Class met at the Engineers Club for cocktails before attending the dinner. From the advance signup list and from an attempted check at the events, our attendance list should have been as follows: Dana Mayo and son, Atwood, Fales, Leigh Hall and wife, Professor Hamilton and wife, Paul and Constance Howes, Tallman, Gus Miller and wife, Reber with wife and son, Aldrich, your Secretary, and Major General Waitt, who wanted to be just plain Alden for the day. We also had as guests our honorary classmate, William Jackson, Professor and Mrs. Cope, and Generals Noce'21 and Scott'21.

Undoubtedly many 1914 men, in the East at least, saw the publicity in connection with the Mead Committee investigation, in which by implication the Chemical Warfare Service was criticized for permitting the manufacture of defective 4.2 mortar shells. Alden Waitt, as the chief of the Chemical Warfare Service, was on the witness stand, and it was obvious that the interest of Senator Mead was to try to involve Waitt, although he was only recently appointed chief of the Chemical Warfare Service, with the so-called Garsson combine. Unfortunately newspaper journalism features scandalous headlines but puts the facts in short paragraphs deep inside later issues. It is to be hoped that every 1914 man who saw the malicious headlines also saw the later factual report in which it was brought out that the defects in these shells were not associated with the Chemical Warfare Service and that in fact this particular shell had a better record in freedom from failures than any other type of mortar or artillery shell. See data in the New York Sunday *Times* of September 8. Your Secretary heartily joins with the several editorial writers who severely criticized Senator Mead for the smear type of investigation he conducted. A new honor has recently come to Alden. Upon designation by the Secretary of War and approved by the President of the United States, Alden has been appointed to the National Research Council for a three-year period, representing the War Department in the division of chemistry and chemical technology.

Mrs. Duffield has asked your Secretary to express her appreciation to the many members of the Class who sent letters and cards to Tom during the long illess which preceded his death on May 15. She reports that they were a constant source of delight and encouragement to Tom.

Again we must record the death of a classmate. Bill Warren died of a heart attack at his home in Darien, Conn., on July 7. William Henry Warren was born at South Acton, Mass., prepared for college at the Concord (Mass.) high school, then attended Worcester Polytechnic Institute and transferred to Technology, from which he was graduated in Mechanical Engineering. He was a member of Sigma Alpha Epsilon. During World War I he served for two years as a first lieutenant in the Signal Corps, being associated with aircraft engineering activities. His industrial life also involved engineering, particularly as applied to manufacturing, his last association being that of president of Winslow-Warren, Ltd., of Norwalk, Conn. In 1921, Warren married Julia A. Archibald, who survives him. There are no children. — Harold B. Richmond, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. Charles P. Fiske, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

1915

Any of you not at our Victory Reunion in June certainly missed a good party. Those who were there enjoyed a fine reunion at the Cape Codder Hotel at Falmouth, Mass., as attested to in the letters below.

From all over the country came these men: San Willis, St. Louis; Loring Hall, Detroit; Parry Keller, Akron; Ben Neal, Lockport, N.Y.; Bridge Casselman, Pittsburgh; Bill Spencer, Baltimore; Otto Hilbert, Corning, N.Y.; Bill McEwen, Wellsville, N.Y.; Charlie Norton, Martha's Vineyard; the Philadelphia gang: Herb Anderson, Arthur Ball, Maurice Brandt, Sol Schneider, Ed Whiting; from Connecticut: Wayne Bradley, Ted Brown, Chauncey Durkee, Vince Maconi, Stanley Osborn; from metropolitan New York: Little Andy, Ben Lassen, Joe Livermore, Hank Marion, Gil Peakes, Tower Piza, Kebe Toabe; from metropolitan Boston: Bill Brackett, Whit Brown, John Dalton, Sam Eisenberg, Abe Hamburg, Loring Hayward, Reggie Foster, Clarence Hansen, Seward Highley, Louis Gale (honorary member), John Homan, Wink Howlett, Clive Lacy, Larry Landers, Azel Mack, Archie Morrison, Pete Munn, Frank Murphy, Charlie Paine, Wally Pike, Gene Place, Pirate the Red Rooney, Chet Runels, Al Sampson, Frank Scully, Henry Sheils, Ed Sullivan, Herb Speed Swift, Fred Waters, Easty Weaver, Max Woythaler, Louie Young, and the always Johnnie O'Brien.

In answer to the many compliments, I bow graciously to the committee, who gave so generously of their time, effort, interest, and personal experience to make our reunion so successful. It surely would never have been so successful without the pleasant send-off Barbara and Virginia

Thomas gave us at the 1915 headquarters at the Institute, which they arranged. Gowned sweetly in their best, and with their most attractive and pleasing manners, they greeted us all and sent us on our way to the reunion with a gay and happy start. Many thanks from us all to Barbara and Virginia.

The only thing to say about the reunion is that it was a swell time. There was excellent food and service. We renewed old friendships, had some golf, swimming, sailing, loafing, small games of chance, and a little drinking, with fine weather all the time. The class photographs taken Sunday noon were mailed to everyone attending the reunion. Spend a quiet winter's evening comparing this picture with those from the other reunions, go back over the years, and see how time marches on. We had a wire from Ray Stringfield on the Pacific Coast: "Ken Kahn and I send best regards to all. Advise searching Casselman's pockets for torpedos and razor blades." Nice of them to think of us. Bridge Casselman's pockets yielded no weapons; only a few unmentionable articles.

What a pretty wedding — what a gay reception — when Sam Eisenberg's older boy, Eugene Robert (M.I.T.'43), was married to Shirley Helman at the Belmont Country Club in Belmont, Mass., on September 23. From 1915 all the best to this nice young couple.

James A. Tobey, 840 Forest Avenue, Rye, N.Y.: "Since signing up, I have taken on a radio job which requires me to give eight half-hour broadcasts a week — one on Friday from 4:30 to 5:00 P.M. and another on Monday at 9:30 A.M. with considerable preparation in between. . . . At the time of the reunion, I shall have been on the air waves only about two weeks, and cannot very well walk out for a week end, if I expect to continue in this profitable venture. . . . The program is the 'Ask Dr. Eddy' show over WOR in the afternoon, and over the Yankee Network in New England on Monday, Wednesday, and Friday mornings. It is WNAC in Boston. I am taking the place of Dr. Eddy who has been doing this show for about six years and now is on an extended vacation. . . . No doubt the wives, or sweethearts, or daughters, of some of our classmates would be enormously edified if they listened to this sterling program. They might even be inspired to write to the station to extol the commentator. . . . Please give my best personal regards to all our classmates who are with you. The same to you, and drop in and see me when you are in New York."

In June, Albert E. Sampson, 9 Thorndike Street, Beverly, Mass., wrote: "You and your committee did a swell job, and I take this opportunity to commend you all for the good work. . . . I am sure everybody had a fine time, and it certainly was nice to see all the old crowd again, and doubly pleasurable to see those whom we had not seen for years."

About the middle of May, I heard from Kenneth K. Boynton, whose address now is 79, Avenue des Champs Elysées, Paris, 8°: "How I wish I could be with you next month, but this seems entirely out of the question this year. . . . I came over to this side in March, going first to England and from there to France, then to Spain and back to France, and up to Sweden and Norway. I am scheduled to go to Germany next week and after that to Switzerland and Belgium. . . . I am having an extremely interesting experience, but it certainly is no time for one to travel in Europe for pleasure. Traveling conditions are, of course, very difficult, and the food and living problem is acute in most countries. My feeling, however, is that from now on conditions should begin to improve more rapidly in some countries than in others. . . . I have not, as yet, definitely established any headquarters, and the only home I have is still in Mexico, but I do not know when I shall see it again. I have set up provisional headquarters in Paris, from which point our pre-war operations were directed. . . . You might let any of the Class who may be coming to Paris know where my office is. I certainly shall appreciate having anyone call in or telephone when here and only hope that if someone does come over I shall be in Paris when he is there."

Vince Maconi, 63 Brookside Avenue, Hamden 14, Conn.: "I had a fine time at the Cape. My younger son, Norman, was discharged by the Navy on the 13th of June. He was on the *Waxwing*, mine sweeping in Japanese and Korean waters."

Eugene Place writes in July: "Unfortunately, I have not run into any of the boys who were at the reunion, but to me it was a grand time. There seemed to be a continuing amount of pleasure to be derived from being there and the 'enjoyment curve' had a sharp rise to the right." Gene is now at the Boston office of the American Mutual Liability Insurance Company, 142 Berkeley Street, Boston 16. I spent a jolly evening with him and Ruth Place, who still boasts of having secured a signature of everyone at the 25th reunion cocktail party in the Boston Statler. Gene's son, Bill (M.I.T.'43), with his wife and baby, were visiting at the time. A nice family!

San Willis, Fairgrounds Hotel, St. Louis 7, Mo., writes me: "It sure was great to see you and all the gang at the Cape Codder last week, and once again I take off my hat to you as an impresario of reunions. Everything was just about perfect, so far as I was concerned. I returned to St. Louis to meet the worst spell of hot weather here since last August."

Bill Spencer, 213 Cedarcroft Road, Baltimore 12, Md.: "I thought, and so expressed myself, that the expenses for our very fine reunion were quite low. . . . We are all greatly indebted to you for the grand time and for the effort you make for the benefit of all!"

Frank Scully, 91 Fresh Pond Parkway, Cambridge, Mass., says: "It is all right with me to have a reunion like that every year, and I'd like to see a lot of fellows other than the Boston crowd come out for it."

Philip L. Small, Som Center and Cedar Roads, Gates Mills, Ohio: "How you keep up your pep in work for the Class is beyond me. I hated to miss the class reunion but the O.P.A., C.P.A., and so on take much of my time."

Clive W. Lacy, 261 Nahanton Street, Newton Center, Mass.: "You did a great job on the reunion, and I certainly enjoyed the time I spent at it. How about another one in 1948? I have just returned from a trip to Canada."

Newell L. Foster, 53 Central Street, Lowell, Mass.: "The reunion, I think, was one of the best that we have had. It was enjoyable to see so many of our old friends at what might be considered an off-year reunion. However, its success is the reflection of the excellent work put in by you and your committee."

Here's one from Albert H. Anderson, 123 West 76th Street, New York 23, N.Y.: "Who drank all that liquor? It was a wonderful week end, not *lost* at all, and you fellows did a great job — weather, location, food, and most of all, the good-fellowship and company of the old crowd. I was sorry more of us did not make it. . . . George Rooney rode back to Boston with me, and I have the great man's hat in the back of the car." We all know that Little Andy was the life of the party and helped to amuse us.

Charles Loring Hall, 17410 Fairway Drive, Detroit, Mich.: "It was a very swell reunion, and if everyone had as good a time as I did, there will only be praise for you fellows who did all the work. . . . As for having our gatherings oftener, I am all for it. The five-year parties should be emphasized, so as to get as large a crowd at that time as is possible, but in between perhaps we can have some less formal arrangement. For instance, the committee might select a hotel, but instead of making a guarantee and a group reservation, let each man make his own reservation and stay as long as he likes. I imagine there would be at least 20 who would welcome such an opportunity to spend a few days at the shore, in good company, and others from around Boston would probably drop in for a day or two. . . . The best news I have is that my second son, Richard, has been accepted for the fall term. Knowing how stiff was the competition, I feel very much elated."

Give a little thought to Loring's idea for these intermediate reunions. Many have spoken of it, but he seems to have the best suggestions. I'll be delighted to hear from any or all of you, so make some plans along these lines. Ordinarily the next reunion would be in 1950, four years from now, but with so much interest and enthusiasm you fellows might let me know how you feel about a reunion in 1948.

George Rooney, 14 Pelham Street, Cambridge 42, Mass.: "You are to be congratulated on another highly successful reunion. That party at the Cape Codder was one for the book. The location, the accommodations, and the food were great. . . . I got a great thrill from meeting again that grand gang of ours. They are like good wine; they grow better with age. Ethel got a great kick out of the glass wrappers and the compact. She wasn't so interested in the shaving equipment. The old Pirate appreciated that. . . . You certainly went to Tech with some three-fisted guys. Glad I don't drink . . . I'm for more meetings with our fellows." Pirate George refers to the useful and attractive gifts that generous classmates donated. Let's give credit to Herb Anderson for his knitted "Lo-Jacs"; to Ben Neal for his compacts for the ladies; to Louie Young, for the gold scraper holders

for blades; and to Louis Gale for the shaving cream.

A short note from Kebe Toabe, 1085 East Grand Street, Elizabeth, N.J.: "Any way you take it, we had a good time, and if we have a repeat performance next year, I should certainly be there."

Gilbert L. Peakes, 276 Grove Avenue, Metuchen, N.J.: "The big reunion is fading away into the distance now, but it will have to do a lot of fading before the memory of that good time is completely gone. The Class should be, and I believe most of them are, everlastingly grateful to you for making it possible. I've had the same job you handled, in running a lot of big Bakelite parties, and I know what you go through, and how few people appreciate it. . . . Here are the films I snapped — — mostly poor — a few all right. I had Casselman and Durkee and Landers with me as passengers. Notice what a spot we picked to snap a picture — just made for us."

From Bill McEwen, Wellsville, N.Y.: "The reunion was a decided success, 100 per cent because of your efforts. You have kept up the interest of the members of the Class to the extent that all those there are looking ahead to the next one in 1950 which is not too far ahead."

Maurice Brandt, Post Office Box 695, Trenton, N.J.: "It is with embarrassment that the Class's worst correspondent writes 1915's best member, but keep up the good work. There are a lot of us poor writers who are mighty appreciative of what you do. It was a wonderful reunion."

Herbert Anderson, Winding Brook, Prospectville, Pa., writes: "I certainly did enjoy our reunion at the Cape, and I hope that when our 35th comes along we shall set an attendance record. . . . By a strange circumstance I wound up without even a single package of cardinal and gray "Lo-Jacs" for the house with only a memory verifying my having ordered for the reunion!" Now that's a shame that Herb didn't get any return on his investment. In fact, I was almost trampled on myself trying to get one set. A popular gift! But I did find some to send to Herb to help him.

John B. Neal, Norton Laboratories, Inc., Lockport, N.Y.: "I have been pretty slow this year but am glad to attach herewith my check for the Alumni Fund. If you keep plugging on these late guys like me, I am sure you will get it over the top. . . . You will recall the famous boat trip at the reunion. When we were down in the lobby, one of the smaller brethren was complaining that he didn't have a jacket to wear, and I went up to the room and obtained for him a golf windbreaker of double thickness, brown on the outside and white on the inside, to use on the trip. . . . Later on, I saw him on the boat dock down at Woods Hole wearing the jacket. Still later on in the evening, he told me he had returned it to my room. . . . Unfortunately, however, as you may recall, I had switched rooms, and instead of returning it to the room number that I told him he must have gone to the desk and gotten the original room number and returned it there. . . . Anyway, I returned on Sunday night without the jacket. . . . It isn't too serious a loss, but in addition to the jacket, I am quite certain that I put in one of its pockets a small passbook of Mrs. Neal's on the local bank — of no particular value, except as a matter of sentiment; but I can't find it anywhere else, and I had it with me on that trip." If any of you can help Ben locate his jacket, I'm sure he would appreciate it. On my annual summer visit to Buffalo, the Hiltons were away, but the Neals carried on the tradition with an afternoon and evening at the Buffalo Country Club, leaving me convinced that it is impossible to dry up Niagara Falls in that short length of time.

At the Alumni Dinner at the Boston Statler on June 8 the following 1915 men were present: Phil Alger, L. H. Bailey, Evers Burtner, O. R. Freeman, Gabe Hilton, Parry Keller, B. W. Lassen, D. H. McMurtrie, A. S. Morrison, P. J. Munn, F. P. Scully.

We have another class bride! And to her go the wishes of the Class for all the best. Jim Tobey's daughter, Sylvia Lincoln, was married to Richard Ellis Hoisington on Friday, August 16, at Rye, N.Y.

If you haven't already sent in your contribution to the Alumni Fund this is a good time to do it. Mail it before the end of the year and put 1915 over the top again. If everyone here were as intent and generous as Pellian T. C. Mar, Rear Admiral in the Chinese Navy, who sends his from the Chinese Navy Kiangnan Dockyard, Arsenal Road in Shanghai, 1915 would make its quota.

My summer visits included an evening in Boston with Tom Huff, 7038–40 Garrett Road, Upper Darby, Pa., who was visiting here; lunch with San Willis on from St. Louis; and the usual round of pleasant associations with the Boston gang. If you want notes like these to continue, write me and "help Azel." — Azel W. Mack, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

1916

It seems to be unanimous. The 30th reunion had everything. With 100 per cent perfect weather — meaning temperature exactly right and a really clear blue sky — 77 members of the Class gathered at East Bay Lodge, Osterville, Mass., over a three-day week end, June 14, 15, and 16. They came by plane, car, and rail. As far as is known, no one had to walk! Flying in from Newark early on Thursday were Peb Stone, George Maverick, and Meade Bolton. Other early arrivals were Bill Farthing and Jim Evans, who drove in Thursday evening from New York. Sharing the spotlight with the above were Steve Brophy, Dina Coleman, and Harold Dodge.

Golf, bridge, tennis, swimming, reminiscing, bar-flying, and just plain sitting, were the principal occupations of the three-day period. Of special significance to the Class was the fact that Mrs. Leghorn, our gracious hostess, is the good-looking sister of *the* Ken Sully of California. Hen Shepard was in charge of arrangements at this most delightful of spots on Cape Cod. Tom Berrigan ran the sports events, Bob Wilson presided over the bridge tables, and Bill Farthing again donated a "President's Cup" for the top golf prize. Jim Evans, "mystery chairman," had a series of big surprises up his sleeve. Prizes for sports events, for the banquet lucky numbers, and for the series of raffles conducted to cover certain extraordinary expenses, were donated by many and were of a choice and varied nature.

The shore dinner on Friday evening was, conservatively speaking, somewhat noisy. Bill Farthing had his hands full suppressing the noise level sufficiently from time to time to permit intelligent reception of his announcements. On a lucky number drawing, Walter Binger came in first for a bottle of Scotch, and George Maverick took the second prize of golf balls, which he promptly scattered over the floor in all possible directions.

On Saturday afternoon there was lively baseball, with Tom Berrigan as captain of the New England team and Frank Ross as captain of the U. W. team. Hovey Freeman was the perfect umpire, telling each batter just what to hit, good or bad! A sidelight of the game included the passing of a live frog from pocket to pocket between Peb Stone, Bill Farthing, and Ralph Fletcher. In the tennis tournament Jap Carr and Steve Berke came out on top.

The grand reunion dinner started off at 7:30 on Saturday evening, with a roaming musician, distribution of prizes, and no speeches (so the announcements said). Shortly before dinner the class picture was taken on the esplanade. Phil Baker acted as master of ceremonies in distributing the prizes. Before proceeding to business, Phil promised free keys to the city of Detroit — the ideal spot for the 35th reunion, he said — and was it a new automobile to all comers if his offer were accepted? For golf, the low prize went to Frank Ross, with an actual count of 78. By the way, did you know that Frank was the Connecticut state golf champion in 1926, the Connecticut state champion in 1930, and the New England champion in 1933? In the Kickers' Handicap, Harold Gray got first prize; Maurice Holland, second. Four out of the 24 entered in the Kickers' shot under 90 on the beautiful Wianno golf course. At the other end, at least five out of the 24 had a gross over 125. This latter information is given to show that competition may be had at any level at 1916 reunions. Bring your clubs the next time. Further raffles at the reunion dinner turned up many winners. Rusty White won a birdbath, and since Rusty had no bird the Class felt sorry for him and furnished him with same, so it is told. The Saturday night bridge tournament was run by Bob Wilson, and several tables took things seriously until the wee hours; kibitzers outnumbered players.

On Sunday more golf for the golfers and more sitting for the loafers, topped off by regular class meeting on the beach at noon. The following were elected members of the executive committee: President, Bill Farthing; Treasurer, Hovey Freeman; Secretary, Ralph A. Fletcher; Assistant Secretary, Harold Dodge; and two members-at-large, Steve Brophy and Chuck Loomis. At the meeting Walter Binger brought up the matter of printing the class history, using the information furnished at the 25th reunion, supplemented by addenda for the last five years. It was voted that Walt circularize the Class for expressions of their opinion.

Steve Brophy, chairman of the committee, deserves a citation, for much of the

burden of the arrangements fell to him. Special praise also goes to Bill Farthing, who held himself continually available to welcome every new arrival and to see that no one missed anything. Steve Whitney is also in line for commendations, for he furnished two beach wagons for transportation from the University Club to Osterville. Added to the list of those who contributed to the success of the reunion should be the name of Barney Gordon for his cardinal and gray nylon stocking caps and the many pairs of nylons he donated. Telegrams and letters of regret were received from the many who were unable to attend, and most of these expressed a resolve to be present at the 35th. Rest assured *you* were missed.

In a more serious vein the Class has enjoyed prominence. Witness the following: Nancy Duxbury Freeman, daughter of Mr. and Mrs. Hovey Thomas Freeman, of Providence and Bristol, R.I., was married on August 3 to Norman Douglas MacLeod, Jr., of Kenyon, R.I. — In the spring, Terry R. Oberg, 274 West End Road, South Orange, N.J., was given a dinner at the Newark Athletic Club in observance of completion of his 25th year with the Western Electric Company. He is in charge of the supervisory and job training program at the Kearney works. — Laurin Zilliacus, International President of the New Education Fellowship, has been teaching at Columbia and living in Darien. Dr. Zilliacus was very active during the war with the Finnish underground movement, and later with the foreign diplomatic service in Sweden.

Gordon F. Fair has now, we hear, been appointed dean of the graduate school of engineering at Harvard, where he has been a member of the faculty since 1918. — Charles J. McCarthy, Vice-president of United Aircraft, officiated in July at a test air race. In the demonstration, a helicopter, flown from Bridgeport to Hartford, beat by 17 minutes a plane, train, and automobile leaving at the same time and traversing the same course. — Russell Hubbard White of 497 Huntington Avenue, Boston, has published a new edition of the Bible. He has combined the four gospels into one book under the title of "The Combined Gospels of Matthew, Mark, Luke, and John." Rusty has just announced the first edition.

Harold Dodge, Assistant Secretary, is to be commended for his splendid notes on the reunion. If the December issue permits, we will try to work in the remainder. — Ralph A. Fletcher, *Secretary*, P.O. Box 71, West Chelmsford, Mass. Harold F. Dodge, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

1917

Alumni Day activities were made even more festive by the sight of so many familiar faces among members of the Class, and a favorable introduction was established to the big plans for our 30th reunion next year.

Our members with literary leanings have been busy recently, and we find that W. I. McNeill has developed the theme of "Education for Controllership" in the May, 1946, issue of the *Controller*. There has also come to our attention notice of the publication in *Motor Boating* of "Celestial Navigation Simplified" written by W. Mack Angas, who is a commodore in the Navy, and others. Out in the Pacific Northwest, Neal Tourtellotte, who has been asked to "farrow" a column from time to time in the *Weekly Livestock Journal*, has further discussed "More Profit from Swine" in a recent issue, and will appreciate any comments on this topic to Box 263, Route 1, Woodinville, Wash.

Some changes in positions have been made. A. C. Carlton left Ordnance to join the staff of the Franklin Institute in Philadelphia as executive director of the museum. In addition to the museum, the Institute is carrying on an extensive research program and performs the usual functions of a scientific society. Dick Logan is with Charles T. Main, Boston architects and engineers, who prepare plans and specifications for, and supervise construction of, all types of industrial buildings, as well as other engineering work. Walter F. Pond, state geologist of Tennessee for 18 years, has accepted the position of geologist for the Magnet Cove Barium Corporation at Malvern, Ark. In addition to handling the company's geologic problems in connection with Arkansas barite deposits, he will investigate other mineral holdings of the company in various parts of the United States. Bob Marlow's headquarters with the Ground Safety Office of the Army Air Forces are now at Westover Field, Massachusetts.

Among our members in the military forces, Max J. Mackler and Herbert C. Williamson were designated full colonels.

Stanley Knox Cooper, living in Sewickley, Pa., and executive of the Johns-Manville Company, must be proud of his wife, Esther Sayward Cooper, whose talents in musical composition and choreography have caused her to be numbered among the "Who's Who" in Pittsburgh music circles.

P. Y. Hu left Pittsburgh early in June, and his plans were to make a trip of about two months to Europe and then return to the United States again before finally going back to China. His address is National Resources Commission of China, 111 Broadway, New York. — Raymond Stevens, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. Philip E. Hulburd, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1918

It was the last week in August. All over New England vacationers were engaged in the pursuit of happiness. Some were stretched in languor on a beach. Some swung in hammocks. Some indolently traveled the petty arc transcribed by a rocking chair. Of these, some were also lazily thumbing *Life*, but those of us who belong to 1918 got a quick nudge upon reaching page 67, for there, seated on the mullion (or whatever the architects call it) of an unfinished window with his overcoated back to the wide Atlantic, sat Bill Wills. "Boston Architect Designs the Kinds of Houses Most Americans Want," says the caption. Yea, verily, but of the 140 million Americans only eleven hundred families, and some incalculable fraction thereof, live in one of Bill's houses. We ran off the edge of the slide rule trying to calculate how many of them have read his six books, now running into over 520,000 copies. The story says in part: "Solidly entrenched as the leading U. S. designer of small traditional houses, Wills has become a focal point for the distaste of many of the country's more vociferous but less popular modern architects. They call him a copyist and an opportunist and scorn his lack of enthusiasm for designing 'machines for living.' In rebuttal, Wills maintains that good residential architecture should be primarily emotional and, like a good art, be a part of the people and understood by them — a status which modern architecture cannot yet claim." You tell 'em, Bill, and as a matter of fact, we heartily agree with you. Incidentally, our consulting psychiatrist diagnoses that "copyist" name calling as subconscious envy. Congratulations on the million dollars' worth (well, twenty-five thousand anyway) of free advertising. You deserve it as a long due payment for what the Admiral said to you when you drew that cartoon called "A Wet Corner of the Dry Dock" way back in World War I.

Through the columns of the *News Record*, published in that disturbing city called New York, comes word of Peter M. Strang, a lieutenant commander in the Naval Reserve at the time of discharge, who, so it says, has joined the alliteratively titled Institute of Textile Technology in Charlottesville, Va., for the purpose (we gather) of working on the development of textile machinery. "He comes to the Institute," the paper goes on to say in its omniscience, "after three and a half years in the Navy as resident naval inspector of ordnance at Danbury, Conn. Although born in Scotland, Mr. Strang claims Massachusetts as his home state. He has been interested in various aspects of textile research, particularly mill development and new equipment, all his life. His first association was with the engineering firm of Lockwood-Green and Company, followed by work with a mill supply firm in Spartanburg, S.C. For six years he was senior cotton technologist with the United States Department of Agriculture. Mr. Strang is a frequent contributor to various technical journals, his publications including such articles as 'Mill Consumption of American Cotton by Grade and Staple,' 'Sun Spots, Ionization of Air and Textiles,' 'Some Phases of Cotton Character,' and numerous others."

Alexander Magoun claims to have driven his 1940 Plymouth 20,000 miles since March 1, mostly on business. Anyway, we know that he was visiting professor in Oregon last summer, participating both at Oregon State and the University of Oregon. To illustrate what a small world this is (we couldn't take the time to think up a more original expression) he was stopped twice on the streets of Corvallis, Ore., in less than a month by some former student. The first was Albert W. Schlechten, who got his doctorate from Course III in 1940 and has lately gone to head the metallurgy department at the Missouri School of Mines. The other was Thomas B. Hayes '40, VI-A, who is a partner in a firm of consulting engineers, with offices in Corvallis. They know you by the whiskers, Professor. — Gretchen Palmer, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

Timothy E. Shea of Rutherford, N.J., was awarded the Medal for Merit by the Navy, an account of the award appearing in the New York *Times* on June 5. The presentation was made in Washington, D.C., with Secretary Forrestal, Admiral Nimitz, and many ranking submarine officers present. The citation by President Truman follows: "Timothy E. Shea, for exceptionally meritorious conduct in the performance of outstanding services in furtherance of the war efforts of the United States, while serving as chairman of a section of the National Defense Research Committee. Under his brilliant and inspiring leadership the activities under his direction, working in closest co-operation with naval activities ashore and afloat, designed, produced, and installed many devices which enhanced to a tremendous extent the offensive and defensive potential of units of the United States Fleet in their highly successful war against our enemies. This action on his part is in keeping with the highest traditions, long since established by the patriots of the United States of America." Timothy also received a degree of doctor of science from Columbia University with the following commendation, "Timothy E. Shea, engineer; noted for research in the fields of electrical networks and communications equipment; responsible for the development of submarine devices during the war; displaying in that connection the highest qualities of leadership in administration and initiative in research; one of 'those rare intelligences, active, alert, inventive.' " The Wellesley *Townsman* on June 13 carried, in addition to this story, the following interesting biographical information with regard to Tim: "While on leave of absence from Western Electric Company, during 1941-45, Shea was director of research for Columbia University and member of Division Six, National Defense Research Committee. Besides directing the New London laboratory and other activities, he supervised a large number of engineers and scientists working with the Pacific Fleet at Pearl Harbor and in forward areas, and maintained liaison with Pacific Fleet commands."

Karl Rodgers relayed some of the above information to me in his letter of June 5, and he also gave me some information about Bernard Coleman, who spoke at the National Convention of Social Workers in Buffalo at about that time. — Alan G. Richards writes that he has tried to get in touch with me in New York but has missed me each time. His conclusion is that I do not stay at home any more than he does.

The Alumni Association sent in the information that Edward E. Scofield has severed his connection with the Washington Water Power Company and is now with the Lee F. Austin Company at West 820 Second Avenue, Spokane 5, Wash., and also that William H. Bassett, Jr., former chief of the ammunition branch of the Army Service Forces at the Springfield Ordnance District in Springfield, Mass., is now at the Army Industrial College in Washington, D.C. — The Newton, Mass., *Graphic* on May 16 carried a story about Carl Phelps, principal of the Kodaikanal School of Southern India, and his talk to the Newton Rotary Club about educational facilities for American children in southern India. — Eugene R. Smoley, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. Alan G. Richards, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1920

Your Secretary hopes that each and every one of you had a good summer and still retains some of that tan. I could fill a whole page with an enthusiastic account of our reunion at Pine Orchard last June, but those who were present have received by now a souvenir of the occasion, and those who weren't would only feel bad if I were able to convey some idea of the good time we had and the good fellowship that was generated. Suffice it to say, that it was probably the most successful of all of our reunions to date. There were some 75 on deck. The weather, accommodations, and food were as near perfection as could be, and everything clicked all the way through. You had better not be absent from the next one. These occasions are simply too good to miss.

Dave Fiske couldn't make the reunion but did write to say how sorry he was. He returned from four years in the Army, ending with a trip to Manila, and is back at the old stand as secretary of the American Society of Refrigerating Engineers at 40 West 40th Street, New York, a job he has held for 20 years. Dave has a daughter in college and a son nearly there.

Bob Davis of 535 Fountain Street, Grand Rapids, is the most recent contributor to our class gift, recent only because the generous bond which he purchased for the fund was lost by the bank and only recently recovered. This is therefore in belated acknowledgment of Bob's fine class spirit. May he set an example to the rest of the laggards! (If any of you have forgotten what to do, don't hesitate to ask me.)

Bob Tobin celebrated with us at the reunion his waning days as an old bach and married Phyllis Patricia Lake of New York and Beverly Hills in July. The happy couple had an extended honeymoon in Mexico City and are making their home in New York City and Fairfield, Conn., where Bob is president of the Tilo Roofing Company.

Heinie Haskell has been made vice-president and director of the East Coast Aviation Corporation of Rhode Island. Heinie is owner of the Ri Conn Airport in Green, R.I. Before leaving the service as a commander in the Navy, he worked for the Bureau of Aeronautics on the production of airplane engines, jet engines, and aircraft components and studied jet propulsion developments in Germany. He is president and treasurer of the Brunswick Worsted Mills in Moosup, Conn., and is a director of the Plainfield National Bank. He has four children, including a 12-year-old son who is a pilot, although he isn't permitted to solo because of his age.

Dean Willey has been made assistant vice-president of the New Haven Railroad. He has been with the railroad ever since graduation. Amasa Castor, a lieutenant colonel, is in Manchester, N.H., at 91 Bay Street. Clyde Hall is in Osprey, Fla. John McLeod is in Los Angeles, at 531 South Orange Grove Avenue. Al Peterson has left Chicago and gone to Montevideo, Uruguay, with the International Automatic Electric Corporation. M. S. Sanders has left New York for Wytheville, Fla. Whitney Swift is at the Hill School, Pottstown, Pa. Louis Vance is in Racine, Wis. George Anderson is in Silver Spring, Md. Robert Hayler, Rear Admiral, U.S.N., is back from the Pacific and in Washington. Bill Dewey is in Longmeadow, Mass., at 152 Belleclaire Avenue. Harold Hedberg is in Albany, at 15 Academy Road. Ted Kendrick has moved from Bristol, Tenn., to Richmond, Va. Charles E. Packard is an assistant professor of biology at Alfred University, Alfred, N.Y. Bink Carleton, who was a lieutenant colonel, is back with Sherwin Williams at Bound Brook, N.J. We especially enjoyed seeing him at the reunion. Leland Gilliatt, also a former lieutenant colonel, is back in Marblehead, Mass. Art Atwater is back in this country at Houston, Texas, with Arthur G. McKee and Company.

Your Secretary would certainly like to hear from some of the above mentioned, as well as others not mentioned, because we haven't even got this much news about them.

The Newark, N.J., *Star Ledger* contained a big feature article with pictures, describing the unique home of the K. B. Whites at 1300 Manhattan Avenue, Union City. K. B. transformed a block of five garages into a beautiful and unusual home, based on his and his wife's residence in Brittany. One huge room has been ingeniously designed to serve all purposes, including, believe it or not, a blue concrete pool in the center of the room which serves as the bathtub. Some of you fellows in and around New York ought to go and see this remarkable house. Maybe you could even take a bath! — Harold Bugbee, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Hearty greetings and welcome back to the family circle. There's plenty to report on the proceedings of our 25th reunion in June; so, with due thanks to those who worked so hard to plan the reunion and those who came out and assured its success, let's look at the record.

On the eve of Alumni Day, Dr. Compton gave a dinner for the honorary secretaries and the admission counselors, at which the Class was represented by Wint Dean, Ed Farrand, Irv Jakobson, Ed Lockwood, Bill Sherry, Whit Spaulding, George Welch, and Cac Clarke as representatives of the Institute Administration in various localities, and by Jack Rule as one of the admission counselors from the Faculty.

Alumni Day on June 8 saw the gathering of the clan in Cambridge. Luncheon in Du Pont Court provided the first meeting of the group and proved that we all deserved Cabot Medals for weathering the physical endurance test of the special 1921 table, located beyond all reach of shade. To our regret, it was learned that our reunion chairman, Dan Harvey, was prevented from seeing the fruit of his labors and would be unable to leave New York because of a death in the family.

At the Stein Banquet that evening, some 15 tables seated the Class in the center of

the Statler ballroom. Warrie Norton, President of the Alumni Association, served as toastmaster for the occasion, and your then Assistant Secretary was privileged to present to President Compton our class gift. For this gift, we are underwriting a memorial to those of all classes who made the supreme sacrifice in World War II, to be placed in the main lobby at Technology when war records are complete and architectural details determined.

Although a violent storm of hurricane force passed over Boston and the shore area during the banquet, the following day was unusually fine, and the 1921 caravan drove to East Bay Lodge at Osterville, Mass., on the south shore of the Cape, for two excellent days of sports and divers scheduled and impromptu gatherings. Some 155 members of the Class participated in the three-day session. Although Dan's committee of Chick Kurth, Murray Jones, Jack Rule, Josh Crosby, Lark Randall, Mel Jenney, Bob Miller, and Paul Rutherford had encountered many difficulties in securing a spot for the reunion and in finding sufficient accommodations, it was a pleasure to welcome an additional group of 51, comprising wives, children, and guests. Chick and Murray were victims of the storm in that the Boston Edison commandeered their services immediately after the Boston banquet, and they were unable to get to Osterville. Among those in uniform were two two-star generals, Dan Noce and Stan Scott, both holders of the Distinguished Service Medal, who made a special trip from Washington for the occasion.

Warrie Norton presided at the class banquet on Sunday, at which Charlie O'Donnell made numerous group photographs. A feature of the evening was the showing of movies and stills from past reunions as taken by Bob Miller and also put together by him from the reels and snapshots which you fellows sent in. During the business session, Zam Giddens reported on the progress of his class gift committee and election of officers provided promotions for your erstwhile Secretary-Treasurer and Assistant Secretary. Ray St. Laurent was elected president and Cac Clarke made secretary and treasurer of the Class. In the balloting earlier this year, Chick Kurth was re-elected as our Alumni Council representative.

Among those to whom prizes were awarded were the following: for coming the greatest distances, Jack Kendall, Denver, and Bill Sherry, Tulsa; foreign country, Helier Rodriguez, Cuba; for the largest family, Bill Sherry with six daughters and one son and Bob Miller with five daughters and one son. A special prize went to Vic Hassold as the father of triplets. Fred Binns, Wint Dean, and Luther Goff won recognition as the grandfathers present. Luther also claims the distinction of being the most recent father in the Class with his fourth child, a son, then five weeks old. Vic Phaneuf won the prize for the kicker's golf tournament with Professor Bill Timbie and Bill Sherry capturing prizes in a tie as runners-up. Low gross was won by Herb Gwynn and high gross by Jack Sherman. Little Billy Sherry, Jr., pulled the numbers from a hat for the door prizes, which went to Elly Adams, Asher Cohen, Vic Hassold, and Ed Wylde. The *pièce de résistance* of the evening was the now traditional story-telling contest, in which Elly Adams nosed out Herb Nock for first honors, despite Phil Coffin's efforts to repeat his triumph of five years ago. A new addition was the special contest among the judges, which was won by our regular guest of Course VI-A, Bill Timbie.

Monday, June 10, the 25th anniversary date of our graduation, brought a continuation of reuning and relaxation until farewells became general, late in the afternoon. A class directory was distributed at Osterville, and, since your Secretary has a few extra copies, they will be sent to those who request them as long as the supply lasts. Please send in your reunion questionnaires if you have not already done so.

Present for the June festivities were the following: Elliott T. Adams, Mr. and Mrs. Frederick W. Adams, Wallace T. Adams, Anthony Anable, Paul N. Anderson, Albert E. Bachmann, Mr. and Mrs. John W. Barriger, 3d, Garvin Bawden, Roderic L. Bent, Frederick W. Binns, Edward W. Booth, A. Ilsley Bradley, Charles A. Breed, Mr. and Mrs. Harry Butters, Albert Calvert, Attilio Canzanelli, Christopher C. Carven, Lawrence D. Chellis, George A. Chutter, Philip W. Clark, Edwin R. Clark, Carole A. Clarke, Mr. and Mrs. J. Ernest D. Clarkson, Philip T. Coffin, Asher Z. Cohen, Mr. and Mrs. John J. Collins, Mr. and Mrs. Robert S. Cook and guests, Josiah D. Crosby, John D. Crowley, James R. Cudworth, Mr. and Mrs. John S. Cummings, Mr. and Mrs. Winter Dean, Edwin F. Delany, Edouard N. Dube, Albert L. Edson, Willard A. Emery, John A. Facey, Edmund G. Farrand, Mr. and Mrs. Ralph E. Ferdinand, Benjamin Fisher, Hartwell Flemming, Webster W. Frymoyer, Joseph W. Gartland, Zambry P. Giddens, Luther Goff, Mr. and Mrs. George F. Gokey, Max C. Goldberg, Manuel M. Green, C. Doane Greene, Harold D. Griswold, Herbert W. Gwynn, Victor C. Hassold, Mr. and Mrs. Walter J. Hamburger, Mr. and Mrs. Munroe C. Hawes, Sumner Hayward, Edward W. Haywood, Sanford J. Hill, Professor and Mrs. Victor O. Homerberg, William G. Horvitz, Dugald C. Jackson, Jr., Irving D. Jakobson, Melvin R. Jenney, Andrew Jensen, Jr., Algot J. Johnson, Mr. and Mrs. C. Harry R. Johnson, Mr. and Mrs. S. Murray Jones, Claire and Malcolm Jones, Herbert A. Kaufmann, Mr. and Mrs. Joseph G. Kaufman and David Kaufman, Jackson W. Kendall, Ambrose L. Kerrigan, Albert J. Kiley, Francis B. Kittredge, William C. Kohl, Fred E. Kowarsky, Mr. and Mrs. Henry R. Kurth, Ivan C. Lawrence, G. Howard LeFevre, Leon A. Lloyd, G. Frank Lord, Joseph M. Lurie, Mr. and Mrs. Donald F. Lyman, Theodore McArn, Willis L. MacComb and guest, Mr. and Mrs. Edmund J. MacDonald, Joseph J. MacDonald, Donald B. McGuire, Richard McKay, Mr. and Mrs. Charles MacKinnon, Alexander M. McMorran, Dan MacNeil, Joseph A. Mahoney, Louis Mandel, Mr. and Mrs. Leo Mann, Robert F. Miller, Hector A. Moineau, Joseph C. Morrell, Harry M. Myers, Philip A. Nelles, Jr., Patricia and Alice Nelles, Mr. and Mrs. Christopher B. Nelson, Daniel Noce, Mr. and Mrs. Herbert K. Nock, Mr. and Mrs. A. Warren Norton, A. Abba Orlinger, James S. Parsons, Norman F. Patton, Ernest Pauli, J. Trevor Peirce, Mr. and Mrs. Leo C. Pelkus, Mr. and Mrs. Victor S. Phaneuf, and Richard Phaneuf, William B. Plummer, George W. Pollock, Albert E. Povah, Raymond L. Presbrey, Mr. and Mrs. Larcom Randall, William C. Ready, Herbert W. Reinhard, Mr. and Mrs. Antonio H. Rodriguez, Arnold C. Rood, Edwin C. Rose, Melvin C. Rose, Mr. and Mrs. Harry Rosenfield, Fred M. Rowell, John T. Rule, Paul H. Rutherford, Mr. and Mrs. Raymond A. St. Laurent, Joseph J. Schaefer, George Schnitzler, Mr. and Mrs. Edson I. Schock, Mr. and Mrs. Palmer Scott, Stanley L. Scott, Stephen J. Seampos, Samuel Sharlach, Ralph M. Shaw, Jr., Mr. and Mrs. John M. Sherman and Margaret Sherman, William J. Sherry, and William J. Sherry, Jr., George E. Shoemaker, Saul M. Silverstein, Mr. and Mrs. Albert E. Smith, Mr. and Mrs. Roy D. Snyder, Mr. and Mrs. George W. Spaulding, Lyall L. Stuart, George Thomson, Professor William H. Timbie, Mr. and Mrs. Everett R. Tucker, Arthur A. Turner, Robert E. Waterman, Joseph Wenick, David P. Wheatland, Frank H. Whelan, Mr. and Mrs. Harry M. Witherow, Mr. and Mrs. Charles A. Williams, J. van Horn Whipple, A. Royal Wood, Edward P. Wylde.

A most pleasant surprise was a telephone call we received late in July from Harry P. Field of Honolulu, who was unable to schedule transportation in time to reach the reunion but came to the States to arrange for the older of his two sons to enter college here. The same day another welcome call came from Helier Rodriguez, who, with his charming wife, Graciela, was in town on his way back to Havana after a trip through Canada. We promptly hustled all three to Glen Ridge for dinner and sent out hurry calls to the New Jersey contingent. Mr. and Mrs. Phil Coffin rushed in from around the corner, the George Chutters and Sumner Haywards broke all speed records on the road from Ridgewood, while Gus and Regie Munning scooped up their Chicago guests, the Clendenins, from a birthday party for the latter's 15-year-old daughter, and together we celebrated a second edition of the June party. Harry, who is commercial manager of the Hawaiian Electric Company, sends his regards to all and promises to visit here more frequently in the future. Helier has written an appreciative letter thanking the Class for its hospitality. For the record, he is president of the San Augustin Sugar Corporation and owner of the America Theater.

The engagement is announced of Mary Stillman Brigham of Newton Center, Mass., to Benjamin Fisher of Dedham, Mass. Miss Brigham is a Vassar graduate and recently served as an officer in the WAVES. Ben is assistant secretary of the Kendall Company, Walpole, Mass. Mrs. Rachel Tuttle Martin of Waban, Mass., and Charles Earle Thornton of Winchester, Mass., were married on June 19. Mrs. Thornton is a graduate of Smith, and Charlie is an engineer with Stone and Webster, Boston. They will make their home at 34 Salisbury Street, Winchester.

A minute of silence was observed at the reunion for those who had left our ranks since the Class came into existence. Particular mention was made of those on the honor rolls for both world wars: Donald W. Curry in the last war and Howard R.

Healy, David A. Newcomer, Alfred J. Lyon, Carl W. Starck, and Fred L. Raymond in the recent conflict. It has been confirmed that Lieutenant Raymond, U.S.N., was captured in the Philippines and lost his life when the ship on which he was being transferred to Japan was torpedoed in Subic Bay on December 15, 1944. Word has been received of the passing of John Thornton Hull in Worcester, Mass., on March 16.

It is with deep appreciation of the honor conferred upon them that your new (?) officers assume the responsibilities assigned. The support which you have given us in the past has lightened the tasks and added to the enjoyment of performing them. Write to your Secretary now and say you'll keep it up! — CAROLE A. CLARKE, *Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

1922

As these notes are being written, our reunion is less than nine months away, and it is time that everyone began making plans to attend. The preliminary notice and return postal card which went out last spring met with a good response, indicating that upwards of 200 will be in attendance next June. Unfortunately, we have been unable to make definite arrangements because up to this moment the date for the commencement exercises has not been definitely established.

What might be called a pre-reunion dinner for the men in the vicinity of New York was held at the Technology Club on June 24. Forty-one attended, including Class President Browning, who came on from Detroit expressly for the occasion. Browning commented at some length on his activities in Washington and then focused attention on the class fund which is being built up for the traditional 25-year gift to the Institute. Browning urged that the goal be set at $50,000, and the majority of those present expressed the belief that this goal could, and should, be attained. As you read these notes, do not delay any more but take action to do your part in raising this fund.

Thirty-five of the Class attended the Alumni Dinner in Boston in June, which was preceded as usual by cocktails in Whitworth Ferguson's suite at the Statler. During the after-dinner speeches, special mention was made of Al Browning's outstanding work for the government and for the Alumni Association. With characteristic modesty, Al escaped from the ballroom during the applause, perhaps to snatch a short one at the bar downstairs.

Congratulations to Crawford H. Greenewalt for his recent election as vice-president and member of the executive committee of E. I. du Pont de Nemours. He has been a Du Pont director for some time. — In the July issue of *American Magazine*, our own Phyllis Krafft (Newill) had a very interesting and illuminating article about Professor Schell, entitled "The Professor who lives 2,000 Lives." — One of the last of the bachelors has deserted the rank. Howard B. Sloan was married on July 13 to Eleanor Williams of Lynn, Mass. Pete and his bride will reside at 161 Lynn Shore Drive. Best wishes to both. — While on the subject of vital statistics, we can not resist felicitations to Hugh Shirey of Rochester, who became a proud grandfather on June 7. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York 14, N.Y. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

1923

A card from Bob Burns indicates that he was on his way to England in August on the *Queen Mary* after his holiday in the United States and Canada. He said he expected to be in Britain for a month or so before returning to Ceylon.

A very late-comer to the ranks of married men in the Class, is Jack Beretta. He was married to Mary Austin Perry Rutherford on July 11, at Saint Mark's Episcopal Church in San Antonio, Texas. I had a chance to have lunch with Jack and meet his bride on July 25, when they were briefly in Boston after a honeymoon trip to Canada. Their itinerary before returning to San Antonio included a visit with H. B. du Pont and a yachting cruise along the south shore of New England. — Another marriage announced in the Newark newspapers of May 25 was that of Edward T. Ross to Eunice Gay Beveridge at Glen Ridge, N.J. Ross is with McGlynn-Hays and Company of Belleville, N.J., and is a member of the American Society of Tool Engineers. The couple were to honeymoon in Vermont and will reside at Lake Hopatcong.

The pleasant custom of allowing ladies at the Alumni Day banquet was taken advantage of on June 8 by George A. Johnson, Fred H. Travers, H. C. Pearson, and A. S. Redway, who appeared with their wives. The other 1923 men at the banquet were James E. Brackett, Horatio Bond, John E. Burchard, H. B. Golding, W. B. Greenough, Jr., A. R. Holden, and R. C. Wagner. At the luncheon early that day in Du Pont Court, Bernard E. Proctor and Richard H. Frazier showed up at the 1923 table.

Norman Weiss is now with the Dow Chemical Company of San Francisco. He was formerly mill superintendent of the Santa Barbara unit, Compania Minera Asarco, S.A., Santa Barbara, Chihuahua, Mexico. A paper he prepared for the Chicago meeting of the Institute was published in *Mining Technology* for May, by the American Institute of Mining and Metallurgical Engineers. It was on the subject, "Mill Design for Labor Economy." — *Chemical and Engineering News* for June 25 reports that M. C. Molstad, of the University of Pennsylvania and chairman of the Philadelphia section of the American Chemical Society, presided at the Edgar Fahs Smith Memorial Lecture in Philadelphia on June 6. At this lecture, The Svedberg, professor of physical chemistry at the University of Uppsala, described the techniques employed in researches on macromolecules.

H. M. King was released to inactive duty from the Naval Reserve with the rank of commander. He is in Louisville as director of architecture of the board of missions and church extension of the Methodist Church. — John C. Flaherty, an Army major, is fully recovered from the severe wound that he received in the service, according to information I have from Charlie Locke '96. He has been discharged from the Army, so that he is returning to Denver, Colo., to resume his occupation as a structural engineer.

Harry E. Kent has been appointed director of engineering of the Edison Electric Institute. — W. Gordon Hughes was appointed general manager of J. C. Rhodes and Company, makers of eyelets, in New Bedford on April 1. Hughes is married and lives in South Dartmouth. — Walter A. Metcalf is back in Boston as director of warehousing and transportation for the Stop and Shop Supermarkets and Economy Grocery Stores. Joseph F. Dinneen, in the Boston *Globe*, devoted a column to Metcalf's war experience, commenting that he had had the unusual experience of going into the service as a lieutenant commander of the Navy and coming out as a colonel in the Army. Metcalf's war work, which has been mentioned in previous notes, had to do with handling post exchange operations in the Pacific. He is now living in Wellesley.

Stanley W. Lovejoy was named supervisor, in May, of the West Lynn works of the General Electric Company. — Emil D. Ries was promoted in July from the position of director of sales to that of assistant general manager of the Du Pont ammonia department. — Charles M. Jones in April became vice-president in charge of public and industrial relations for the John A. Roebling's Sons Company of Trenton, N.J. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree 84, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York, N.Y.

1926

Those who were present at the reunion at Wianno and who had attended previous reunions were vocal in their feeling that the 20th reunion was the best-located one which we have had and that in all respects it was an exceedingly successful and delightful affair. The enthusiasm was so great that there was a very strong movement to plan an annual reunion at the same place. The committee responsible for the 20th reunion, under the chairmanship of Pink Salmon, have this under advisement, and their success in running the 20th should make their judgment very sound.

Attendance ran to nearly 100 and was highly representative of the Class, both geographically and by courses. The reunion was graced by the towering presence of our Class President, who came from London, and by many other distinguished members of the Class — distinguished when they were undergraduates and now distinguished by substantial accomplishment.

Recent visitors to the Institute include Jay Goldberg, who was only shortly back from an extended European trip in the interest of his professional work in textile research. W. W. Criswell, Jr., who is fuel consultant with the United Eastern Coal Sales Corporation in New York, paid an all too brief visit to the Secretary, as did Dudley L. Parsons and A. P. Gabrenas. Since Dudley was here, announcement has come of the formation of Appleton, Parsons and Company, Inc., a new firm in New York to engage in all phases of illustration, design, typography, printing

counsel, and production supervision. In addition to his participation in the management of this firm, he will also continue to head his public relations organization, which carries his own name. Al Gabrenas brought his son to Tech by way of pre-indoctrination, since the boy plans to come here in the future. While in St. Louis this past June, the Secretary had the pleasure of seeing William H. Hoar.

Classmates recently in the news include Giles Hopkins, who wrote in the *Rayon Textile Monthly* on the growing recognition of research management as a profession, and George J. Taylor, who has announced the organization of a new company to be known as Taylor-Light, Inc. George is president of the company, which will manufacture fluorescent lighting fixtures and will have its factory and offices in North Hackensack, N.J. George has had a quite outstanding career in the lighting field, and at the present time he is a member of the Illuminating Engineering Society and chairman of its New York section, board of managers, and of the section's education committee.

Arthur F. Johnson, who for an extended period was located in Cambridge in connection with a research project for his company, Reynolds Metals, has now moved to their plant in Longview, Wash. Cyril Stanley Smith was one of the scientists on the atomic bomb project who received the Medal for Merit. Leonard Phelps has recently written that he is heading the vital statistics work in the General Headquarters of the Supreme Command for the Allied powers in Japan. In this post he has the responsibility, during the coming year, of reviewing the entire vital statistics system for the 72,000,000 people in Japan.

The Secretary must report with regret the death of Max Tarlow of Revere, who died on April 6, 1945.

Four members of the Class who served as lieutenant colonels during the war and have now returned to their former associations are Guy Bittner, New York Telephone Company; John Deignan, United States Engineer Office, Buffalo; Bruce Humphreville, Johns-Manville Sales Corporation, Chicago; and Lloyd Littlefield, Fisk Tire division of the United States Rubber Company, Chicopee Falls. Two of our former lieutenant commanders who have likewise returned to civilian work are Herbert Creedon, who is with the New York Telephone Company, and Edwin Southworth, who is now with Gibbs and Hill in New York. William Magruder, now a captain in the Navy, is stationed at the Norfolk Naval Shipyard. Alan Laing is on the faculty of the department of architecture at the University of Illinois. Alfred Smart's new home address is 14 Bradford Road, Watertown. Ethelbert McKennon Robinson is a bacteriologist with the United Nations Relief and Rehabilitation Administration in Shanghai. — James R. Killian, Jr., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1927

The Class of 1927 is making lots of news. The following passages are excerpts from newspaper accounts of our activities.

Hartford, Conn., *Times:* "Mr. James Pilkington, who was made secretary of the Travelers Insurance Company . . . came to the Travelers in 1927 and, after service in the building and other departments, was assigned to the department of home office supervision. In 1938 he was made home office supervisor and in 1943 assistant secretary. He has been active in Red Cross Work, Greater Hartford Community Chest Activity, and is co-chairman of the Hartford Executive Committee of Junior Achievement."

New York *Times:* "Prof. James G. Van Derpool, head of the Art Department at the University of Illinois, will succeed Talbot Hamlin as librarian of Avery Library when he joins the faculties of Columbia's School of Architecture and School of Library Service on Sept. 1. . . . Before taking his master's degree, he did research work at the American Academy in Rome and at Atelier Gromort of Ecole des Beaux Arts in Paris, in addition to architectural practice in Boston. Before joining the University of Illinois staff, he served as an instructor in the history of architecture at Rensselaer Polytechnic Institute in Troy, N.Y."

Boston *Globe:* "Mr. and Mrs. Benjamin D. Rogers of East Walpole announce the engagement of their daughter, Pauline, to Hermon Thompson Barker, son of Mrs. William L. Barker of East Walpole and the late Mr. Barker. Miss Rogers is a graduate of Colby Junior College and the Faulkner Hospital School of Nursing and attended the School of Public Health Nursing at Simmons College."

Pittsfield, Mass., *Eagle:* "Charles A. Bartlett of Portland, Me., son of Arthur N. Bartlett of this town, has been appointed a judge at Portland. He has been practicing law in Portland."

Wellesley, Mass., *Townsman:* "James Thomas Chirurg, president of the advertising agency of that name, with offices in Boston and New York, has been named by Powell M. Cabot, 1947 Metropolitan Division Chairman, as Metropolitan Vice Chairman in charge of publicity for the Greater Boston Community Fund. Mr. Chirurg makes his home with his family at 2 Fox Hill Road, Wellesley Hills. He is a member of the Advisory Board, American Association of Advertising Agencies and has served on the executive board of the Advertising Club of Boston."

Cambridge *Chronicle-Sun:* "Lt. Col. William P. Berkeley, Air Corps, was presented with the Legion of Merit . . . in a ceremony held recently at the Pentagon. From November 1943 to January 1946, he served as Deputy Chief of Policy Branch, Strategy and Policy Division, Assistant Chief of Air Staff-5. He prepared numerous plans relating to military and governmental policy for the Joint Chiefs of Staff and the Secretary of State. In personally preparing the Air Clauses in the Treaty of Peace with Italy, he performed a service which reflects great credit upon himself and the Army Air Forces. Lt. Col. Berkeley has been appointed marshal of the veterans' division of the Veterans' parade."

New York *Herald Tribune:* "Appointment of Dr. George Bapst Darling, executive secretary of the National Research Council of the National Academy of Sciences in Washington, to a new post at Yale University — Director of Medical Affairs — was announced today. . . . Dr. Darling will correlate the university's interests in the schools of nursing and medicine, department of health and Grace-New Haven Community Hospital in an effort to 'provide a greater efficiency in administration and a more equitable distribution of planning in the many approaches to health, including service, education and research encompassed in the large Yale interests,' . . . Dr. Darling, who was born in Boston forty years ago, was graduated from . . . Technology in 1927. While he was studying at the University of Michigan for the degree of doctor of public health, which he received in 1931, and for a short time afterward, he was research associate in the Detroit Department of Health. From 1934 until just after the start of the war, he was with the W. K. Kellogg Foundation, of Battle Creek, Mich., philanthropic organization for the advancement of child welfare and health. He served successively as associate executive director, associate secretary and treasurer, associate director and comptroller, member of the administrative committee and president. In 1942 he went to Washington as vice-chairman of the division of medical sciences of the National Research Council, in which position he worked with medical scientists of the country in their wartime investigations and handled administrative affairs. He was appointed executive secretary in the National Research Council in 1945."

We also have word directly from George Darling, who gives the following account of himself: "The Washington experience was a fascinating one. About all that can be told (even yet) about it I put into a chapter on the National Research Council in the book *Doctors at War* published in 1945 by E. P. Dutton Company and edited by Morris Fishbein. I have just returned from Bikini, where I served as a scientific observer under an appointment as consultant to the Secretary of War with Joint Task Force One at 'Operations Crossroads.' In addition to the opportunity to evaluate the damage of the atomic bomb, we had time to visit the former Japanese strongholds of Kwajalein, Majuro, Ponape, Truk, and our own base at Guam. It took us three weeks to go out on a task force flagship, three days to come home on four-engined transports!"

Here are excerpts from other letters to the Class from 1927 men all over the map.

Fritz Glantzburg: "In September, 1944, I came back from Italy where I had a B-24 Group and flew the usual 50 missions. In Washington they picked me off a plane on the way to the Pacific and made me deputy of the Army Air Forces scientific advisory group of which Dr. Theodore von Karmán was the mainspring, and all last year we marked on a report telling General Arnold what the Air Forces would look like in 20 years. After two trips back to Europe and one to Japan, we turned in our report in December, and I was ordered down here to organize the new developments division of the Air Command and Staff School of the Air University." (Maxwell Field, Alabama.)

J. F. Donovan, Jr.: "I am commanding officer of the United States Naval Mine Depot, at Yorktown, Va., and reported here for duty in March of this year. Before this, I was in the Pacific for approximately two years, successively commanding the U.S.S. *San Juan* (antiaircraft cruiser), the

Pacific Fleet Radar Center, the Fleet Radar Center, and the Fleet Training Center, Oahu, and was acting commander of the Pacific Training Command. My activities during the past several years have precluded any direct association with Technology, but it is never far from my thoughts."

Robert T. Connor: "My service began on January 4, 1941, when I was inducted with my regiment in the Connecticut National Guard, and ended when I was separated on March 11, 1946. I served in only one camp in the United States, — Camp Edwards, Massachusetts, although I did have a tour at the Coast Artillery School at Fort Monroe, Virginia. My foreign service began two months after Pearl Harbor, and I built up 44 months overseas. I hit Australia, the Solomons, New Guinea, New Britain, the Dutch East Indies, the Philippines, and Hawaii and enjoyed most of it as well as could be expected under the circumstances. I was promoted to the rank of captain at Camp Edwards, major in New Guinea, and lieutenant colonel in the Dutch East Indies. I collected the usual decorations — American Defense, American Theater, Asiatic-Pacific Theater, Philippine Liberation, Victory, Bronze Star, and the Presidential Citation. My whole service was with an antiaircraft artillery group, which enjoyed a splendid record and was credited with more than its proportionate share of the enemy planes. I met several Technology men out there, but the one who stands out most in my mind was Raymond L. Brown '33, a major. In my opinion he was the outstanding radar officer in the Southwest Pacific, and the old school didn't have a finer representative in the area. Now that I am back, I have resumed my old job with the American Surety Company in the Hartford office, where I am a bond underwriter."

Sidney E. Blandford, Jr.: "The Army turned me loose at the end of 1945. I had two years in Australia, one in New Guinea, and one in the States. I was fortunate in that I was doing surgery in active hospitals and had no long staging periods on administrative jobs. Since April, I have had an office in Denver (612 Metropolitan Building) trying to work out the reconversion problems."

Sam Auchincloss: "I joined the Army in 1940 as a lieutenant colonel in the 44th Infantry Division and went overseas with Lieutenant General Bob Eichelberger as Signal officer of his First Army Corps in August, 1942. I fought the Buna campaign in New Guinea with him. He promoted me to the rank of colonel and gave me the Silver Star for my part in the show. I joined General MacArthur's staff as assistant chief Signal officer in April of 1943, a post I retained for the balance of the war, going with him from Melbourne to Tokyo. I was lucky enough to be in almost all his assault landings, including riding on the first plane landing in Japan on August 28, 1945, four days before the surrender. General MacArthur awarded me the Distinguished Service Medal, the Legion of Merit, and the Bronze Star for the part I played in the campaign in which I served on his staff. It was a most interesting assignment, and luckily I got through it without sickness or injury. While in the Pacific, I had the pleasure of seeing a good deal of President Compton, as the Signal office handled administration of the activities of the Office of Scientific Research and Development in the field. We had many interesting talks and trips together. Dr. Compton did some very valuable work, and it was a great pleasure to see that he had been awarded the Medal for Merit for his services during the war. He certainly deserves it, and a lot more, for the part he played. At the present time, I am vice-president of the American Machine and Foundry Company in Buffalo, particularly responsible for the development and installation of the bowling 'Pinspotter' throughout the country."

Lloyd R. MacAdam: "Although the egotist in me is delighted with your thought that other members of our Class will be interested in my change of address to Frankford Arsenal, in Philadelphia, the ugly truth is that I feel that interest should be predominantly my very own, for it has been four long years since I have had the opportunity to live with my family. This is my first assignment since my return from Europe; and only this week have Sylvia and the two children, Deborah and Duncan, together with the two dogs who make up the MacAdam clan, completed a cross-country drive from Carmel, Calif., where they spent the war years. To bring my record up to date, I was stationed in California just before going overseas. While there, I occasionally saw Ted Littlefield in San Francisco. After pauses in North Africa and Italy, I went to France with the group that invaded the southern section of that country on August 15, 1944. From that point on, I simply regretted ever having volunteered in the first place. Now, if I follow the usual routine, I shall probably remain at Frankford Arsenal for a few years before going on to another station. While I am here, however, I look forward this fall and winter to reviving many friendships in this area so thickly populated with Tech men. Already I have spent a most enjoyable afternoon and evening reminiscing with Eddie Petze '28, who has promised to return the visit when we become established in our new quarters."

Howard W. Page: "Since returning from Europe in July of 1940, I was with the Standard Oil Company of New Jersey in New York until early 1942; then for six months was a member of the working staff of the subcommittee on petroleum economics, in New York, N.Y. Late in 1942, I went with the Petroleum Administration for War, in Washington, to analyze wartime petroleum transportation projects. In July, 1943, I became assistant director of the program division of P.A.W. for domestic operations and director of the program division on January 1, 1945. The work consisted of establishing long- and short-term world-wide petroleum operating programs in conjunction with industry committees, both domestic and foreign. I returned to New York at the end of 1945 and on January 1, 1946, took the position of head of the co-ordination and economics department of the Standard Oil Company of New Jersey in New York City. I am living in Manhasset, Long Island, am married, and have no children."

Memorandum from the Alumni Association: John A. Swift has now become associated with Heatbath Corporation, Springfield, Mass., manufacturers of metal treating processes. He and Mr. Kerr are partners and have the exclusive representation for Heatbath in New England. It is their expectation that they will enlarge their operations so as to include a fairly complete line of supplies and products required by heat treaters and metal processing. Jack also is in a position to serve as consultant on heat treatment, testing and inspection, rolling and forging, steel selection and specifications, and other allied lines.

Formal announcement received by mail: Edmond J. Ryan and George R. Copeland announce the opening of offices for the practice of architecture and engineering at 8 Stetson Avenue, Plattsburg, N.Y. — Felix Bardach has returned from Paris, France, and is located at 102 West 80th Street, New York City.

We repeat with regret the following memoranda from the Alumni Association: George S. Gerst, an Army lieutenant, was officially declared dead one year after the date of May 19, 1943, when he was lost in a plane on a mission between Bougainville and Guadalcanal. . . . It is now definitely confirmed that Joseph Lynn McCarthy was killed in the sinking of a Japanese prison ship in Subic Bay on December 15, 1944. — Joseph S. Harris, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

1931

Once again it is a pleasure to commence a new year in these columns and send you our greetings.

The 15th reunion was a great success. Our only disappointment was that more of you could not be present. Thirty-five members of the Class spent the week end of June 15–16 at Ye Castle Inn, at Saybrook, Conn. Lou Hesselschwerdt and Al Coleman collaborated with your Secretary in organizing the party, which all agreed was best yet. Thanks to the initiative of Frank Dame and Don Corson, candid camera shots were taken and vital statistics compiled, which were published in a folder and sent to all those who attended. We want to acknowledge our debt to Frank for the work and expense involved in getting out this folder, which was a most fitting sequel to a memorable week end.

The reunion got under way on Saturday with a buffet luncheon, which extended well into the afternoon, as acquaintances were being renewed, and we were trying to reconcile what we saw with what we recalled from 15 years ago. There was little difficulty in placing everyone as he arrived, however, and a great bull session got under way. Saturday was a beautiful day, and golf and baseball kept most of us busy until dinnertime arrived, although some of the boys who are beginning to feel their age simply sat and enjoyed their own sparkling conversation.

The big dinner on Saturday night was unmarred by speeches, although everyone was called upon to say a few words relative to his activities and present station in life. Lou Stander from Detroit and Cliff Smith, who came up from Waynesboro, Va., traveled the farthest to be with us. Lou drove in from Detroit and picked up Elmer Hughes in Syracuse. Russ Pierce, with four sons, had the most children. Cliff Smith and Ben Steverman, each with three daugh-

ters, were runners-up. Course XV, with 12 members present, was far ahead in the number on hand; Course VI was second, with seven. The total number attending was 35 which represents 7.1 per cent of the entire membership of the Class. Art Newell sailed up from Huntington, L.I., with Randy Binner and Art Lutz as his crew. Bob Sanders, who came from Washington to the 10th reunion in his plane, this time confined himself to terra firma. Dick Pollack took his accustomed place at the piano on Saturday evening while we joined in on some of the old Tech songs. Dick and Otto Kohler also collaborated in rendering some of their special ditties, for which they are justly famous.

Sunday was another gorgeous day. Some of the boys didn't feel too peppy but after breakfast a few went off to "play" golf, and a good ball game was organized for the rest. The ball game began well, but a barrel of beer near third base kept men away from the home plate after the second inning. The ball game had a couple of unique features. Larruping Lutz showed that he was still the superathlete he was when he swam at Tech by hitting two home runs with the bases loaded, in the first inning. Oddly enough, Howie Richardson of crew fame made all three outs for his side in that first inning. Needless to say, with such goings on, the game came to a halt in the second inning, due to the physical exhaustion of the players, plus the lure of shady trees and the long cool drinks. Lou Hesselschwerdt went fishing off the rocks, while a half-dozen hardy souls went in for a swim. A grand shore dinner wound up the day and the group gradually dissolved during the afternoon, each one vowing to be on hand for the 20th.

Those present were: Henry Ahlberg, XVI; Dick Ashenden, XV; John Bahr, XV; Randy Binner, XV; Wyman Boynton, XV; Myron Burr, VI; Al Coleman, VI-A; Don Corson, VI; Gabe Cristofalo, XVII; Irv Finberg, XVII; Lou Hesselschwerdt, II; George Hickey, IX-B; Johnny Higgins, X-B; Ed Hubbard, XV; Elmer Hughes, XV; Otto Kohler, IV-A; Dick Kropf, II; Art Lutz, XV; Johnny McNiff, VI-A; Art Newell, IX-B; Russ Pierce, XV; Dick Pollack, IX-B; Charley Rice, IV-A; Howie Richardson, VI-A; Bob Sanders, XVI; Gordon Shellard, I; Cliff Smith, X; Sheldon Smith, XV; Lou Stander, VI; Ben Steverman, XV; Bill Steward, VIII; and Bernie Stott, XV. — BENJAMIN W. STEVERMAN, *General Secretary*, 11 Orient Street, Winchester, Mass.

1933

The following information has been gathered since the mailing of the notice for Alumni Day. It is good to hear from the boys, and we hope you will continue to send us news.

Course I: Gene Nedbor is a lieutenant at Fort Belvoir. Lincoln Ryder was an Army instructor at Technology and also in the Philippines. He is now back at Metcalf and Eddy in Boston. Ed Peterson is still in the Army and holds the rating of captain. Bob Gulliver has been with the New York City Housing Authority since 1938. A card from C. R. Westaway informed us that he would be in Boston for Alumni Day.

Course II: Al Moeller is a development engineer with Sikorsky at New Haven on helicopters. He is also operating a real estate business in New Haven. Warren Henderson is still with Warner and Swasey; Bob Hanlon, working on steam injectors in Ohio for Manning, Maxwell, and Moore. John Howell notifies us that his new address is Westport, Conn. H. P. Towle writes that he has been discharged from the Army after a period of three years, two of which were spent on the Manhattan Project. George Seavey is with Eastern Gas and Fuel Associates at Everett as instrument engineer in charge of all instrumentation in by-product coke and blast furnace divisions. George Parmakian has been stationed in Yokohama for the past 16 months. Neil E. Hopkins, Jim Hayes, and George Maynard wrote that they would be unable to attend Alumni Day.

Course III: John Streng is a metallurgist with the Inland Steel Company in Chicago, Jacques Chepard is with Wallace G. Rouse Corporation. Emerson Norris is still connected with Sylvania Electric at their research laboratory in Bayside, Long Island, N.Y. Holland E. Benedict, Jr., is still in the Army and stationed in Oklahoma. A note from W. B. Klee, Jr., reads in part as follows: "I'm sorry I can't make it. I'm tied down to the home plate because there's no scrap, no steel, and no production, but plenty of irate customers — see you in '48."

Course IV: We have heard from Joe Carbonell, who writes, "I'm back again and a civilian — the best thing that has happened in years. I am now working in Wilmington, Del., and we're more than a bit busy." A card from Frank R. Heselton reads: "Sorry, no dice on the dinner either at New York or Boston. As you are doubtless aware, the movement of iron ore on the Great Lakes has been booted around in a manner that is wondrous to behold, because of the strikes in other fields of endeavor. As a result, we haven't known from one day to the next the problems we might be faced with at the Soo locks, and conditions are still much too uncertain for me to be allowed any time away from Sault Ste Marie. I should enjoy an opportunity to see you fellows and to observe the progress of the bald heads and bay windows, especially as I still have neither. As for the bull session — I think I can lie as well as any of the rest of you. Here are my best wishes for two enjoyable occasions to those lucky enough to attend." Lou Flanders and W. H. Brown reported that they would be on hand in Boston. L. W. Kent, C. T. Newton, a colonel, and Edward E. Simpson regretted they could not make the reunion. Charles E Locke '96 sent us a clipping from the Boston *Herald* of August 25 stating that Joseph C. Gora was announced as the winner of a $1,000 prize for the best modern-style home design.

Course V: Al Bruce is back in New York with Dun and Bradstreet. A card from Ed Atkinson reads in part: "Give my regards to the fellows who rally around for a bit of elbow bending in Boston. We operate here all summer; so if any of you come through Durham en route to more interesting places, plan to stop off here with me." Ivan S. Cliff reports that he has not been to Boston since graduation but had two delightful get-togethers with Tech men in Houston in the past 10 years. R. G. Taylor has started his own business as a distributor of welding and cutting equipment operating under the name of Harris Calorific Sales Company in St. Louis. Edward Oxnard and Francis Sullivan let us know that they could not make Alumni Day.

Course VI: Dave Smith is now vice-president of the Philco Corporation. Charles J. Alba is connected with Air Associates in Los Angeles. Donald Fink is in Bikini for the duration of Operations Crossroads. Dick Fossett is back in the soap business with Proctor and Gamble in Long Beach, Calif., and is in charge of the soap process division. Leonard J. Julian writes, "This will be the first time since 1940 that I'll be out of the Army with my silver leaves packed away." H. K. MacKechnie worked at the Harvard Radio Research Laboratory on electronic countermeasures during the war, then had a session with the Servomechanisms Laboratory at the Institute. He is now in charge of the Countermeasures Lab for the Air Materiel Command at the Cambridge Field Station. He mentioned that it was good to see Bob Prescott, VIII, and Bill Pearce at the class reunion. A. Y. Snell, F. C. Walker, Winthrop Conant, Frederick Feustel, Max Graham, John Herbert, Allan Hinkle, and H. G. Starck said they were unable to make the reunion. Cards from Dick Morse, Herb Grier, and Ed Goodridge promised attendance at the festivities.

Course VII: Leo Karaian is operating his own plant in Boston, producing nicotinic acid. E. W. Palmer sent his regrets that he had to miss the reunion.

Course VIII: Bill Huston writes in part: "I am enjoying life to the full here in Hampton and at the National Advisory Committee for Aeronautics, and it looks as if this would be home for some time to come. My first paper here came out last month. Do remember me to the fellows — you'll surely be seeing Ivan Getting, Don Fink, Ed Goodridge, Dick Morse, and Dayton Clewell." Rodney Chipp has been with the National Broadcasting Company in their engineering department from 1933 to 1941, when he was called into active duty in the Navy. After a short tour of duty as radio officer for a division of transports, he was transferred to the radar design section in the Bureau of Ships in Washington. He was responsible for the standardization of video and trigger levels for Navy radar repeaters and the design of shipboard video distribution systems. He has been awarded the commendation ribbon with a citation for his work in the development of radar. He is still retained by the Bureau of Ships as a part-time consultant for work to be continued along these lines. He has now joined the facilities section as radio facilities engineer of the general engineering department of the American Broadcasting Company. He will be responsible for radio frequency, and transmitter facilities for television, frequency modulation, standard broadcasting, and allied services. Stan Walters was happy to attend the reunion; Dayton Clewell, sorry he could not.

Course IX: Bill Harper is now a chiropractor in Wellesley Hills. Ken Devine was forced to say no on the reunion.

Course X: Ed Lockman is with United States Rubber, working on rubber-lined steel equipment. Word from Cal Mohr reads as follows: "The only members of our Class at the Chicago Alumni dinner the other evening were Peter Parker and

I. Pete reports that he was on the West Coast with the Chemical Warfare Service during the war and has now returned to his previous position of chief chemist with the Kolar Labs in Chicago. He lives in Palatine, Ill., which is about 25 miles southeast of Ringwood. I talked with John Gardner, who is with the National Grain Yeast Corporation at Crystal Lake, a few days before the Chicago meeting, and he said that business would keep him from coming. Evidently the heat kept the rest of the members of the Class from the meeting. If you ever come to Chicago, let me know, and I will see if I can get some of the boys together for dinner." Robert Dillon reports that quite a goodly number of the Course X boys are represented at the Texas City plant of Carbide and Carbon Chemicals. Winfield Partridge joined them from the Chemical Warfare Service. Bob and Win are working together in the chemicals producing end of the plant. Pete du Pont mentioned that he had seen Dave Treadwell recently. A. H. Munson writes: "I have been in Pittsburgh for the past 14 months, job evaluating on a public utility. I shall be back in Chicago after September 15 and at home, finally. Duke Lafean '19, for the M.I.T. Club of Western Pennsylvania, put on a memorable party on August 16 using Joe Thistle's home for atmosphere and protection from the elements. Out here on the Pennsylvania frontier you will find a good, friendly Technology Club. It is something to remember. Other Course X men will be glad to hear that Art Mason is out of the Navy and very much in evidence. It was 13 years since we had met, and he immediately started the ribbing where it had left off in 1933." Winfield Partridge is now in Galveston, Texas, and could not make the reunion because of the distance. Dick Gorman also wrote that he could not attend.

Course XII: Newton W. Buerger, a lieutenant commander, was at the postgraduate school in Annapolis for four years teaching crystallography and metallurgy and took up his duties on June 19 as a civilian associate professor. Katherine Carman writes: "Summer time is when we drill oil wells in Indiana, Illinois, and Kentucky to avoid the winter mud. Hence we are too busy drilling for me to get away."

Course XIV: Werner O. Bachli has been with General Electric in Schenectady for the past five and one-half years.

Course XV: W. W. Adams, Frank Koerner, Dave Lee, Duke Selig, O. L. Shurtleff, W. L. Sorensen, and G. M. Kincade said they could not make the reunion, much to their regret. Tony Brockelman is in Worcester operating the Brockelman markets. Jack Frost Andrews very proudly announced the arrival of a daughter, Gwendolyn, on May 25. Charles Thumm writes: "I have been working between Chicago and San Francisco for the last two and one-half years. I heard Dr. Compton at an Alumni dinner in Chicago last March. He is really inspiring." Art Hungerford has changed his naval uniform for that of a civilian and is with Special Devices in Sands Point, Long Island, N.Y. Frank Gilmore sent us a note which reads, in part: "I spent the years from 1933 to 1937 in industry, working entirely in the production management area. I returned to Technology for a three-year hitch with Professor Schell, during which time I picked up my master's degree, served as an assistant to Professor Schell on production management work, and acted as assistant director of the sponsored fellowship program. I then returned to industry and spent the war years with the Sperry Gyroscope Company as assistant to the vice-president of manufacturing. In June of 1945, I returned to academic life by accepting a research fellowship for a year at the Harvard Business School, where I was a member of a five-man team conducting a research project for the War Department on the problems of accelerated aircraft production during World War II. The report on this project was submitted on February 1, and from that day to this (June 14) I have been engaged in teaching production management. As you know, I have received an appointment as an associate professor of business administration to be effective on July 1. I suspect many of our old friends will get quite a kick out of the fact that I have gone 'up the river.' Probably very few things that a Tech man can do will get him in more Dutch with his classmates. However, I'm having a grand good time, and am ready to argue the qualifications of the business school with any of them." Ellis C. Littman returned from the Navy early this year and is now vice-president of Nixdorff-Krein Manufacturing Company in St. Louis. Frank Lopker has opened an engineering office in Los Angeles. Most of his work has to do with the design of machinery, equipment, and heating-ventilating installation, as well as the layout and installation of new plants. Harry Summer is still with the Lerner Shops in New York. Frank Gilmore, Sam Prescott, Fred Murphy, and Carl Ekwall were at the reunion. Late word came from Jim Vicary and Gardner Harvey that they would be unable to attend.

Course XVI: George Bentley was with Sperry Gyroscope, Waltham Watch, and back with Sperry Gyroscope. He has now opened his own research and engineering firm of Bentley and Bentley for consulting work and instrument development laboratories for the manufacture of instruments. J. J. Dysart is now living in Miami, Fla. Clare Farr is connected with Du Pont engineering design for rayon and cellophane plant expansions in Wilmington, Del. Z. Choraso is still with the British Army. Dick Molloy, who is with United Aircraft in the research department, supplied some news which is most welcome. Howie Sargent, who went with Pratt and Whitney Aircraft after graduation and became chief test pilot, has left that firm for the Midwest. Gene Rohman is in the East now as engineering field representative for Lockheed in New York City. Frank MacMahon, a lieutenant colonel in the Army Air Forces, was last heard about as attached to headquarters in the Pentagon Building. Bill Sheppard is still with Budd, in Philadelphia, to the best of our knowledge. E. E. Foster and John Wiley notified us that they were unable to attend Alumni Day.

Word arrived from the family of Vincent C. Frisby saying that he is still in Germany with the United States Army. Bill Murphy last reported from the Regular Army with a camp construction battalion in the Philippines. Bill Brothwell has been doing sanitary engineering and more recently is working on a training program. Joe Coenen was with Gavaert and was most recently heard from in the Army. Cole A. Allen is a safety engineer for the American Mutual Liability Insurance Company.

More next time of what space precludes here. Keep sending in the news, and we'll keep this column going. My apologies for not acknowledging many of the notes I should have, but there were just too many. — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1934

It is with deep regret that we announce the loss of two of our classmates. It has now been definitely ascertained that Frank C. Parker, Jr., a major in the Air Forces, was killed flying a bomber from Australia over New Guinea on November 25, 1942. He had been in the Regular Army for approximately four or five years before the war, in the flying service at Langley Field. George D. Gibson, a lieutenant commander, was reported on September 10, 1944, to be missing about five miles south of Palau in the western Pacific. Later, on February 6, 1945, he was officially declared dead. He left two sons, Michael Craig, two years old last July, and George D. Gibson, Jr., born after his father was lost. Edward L. Bateman, Jr., has been released as prisoner of war and is now back with the old firm of Edward L. Bateman, Ltd., P.O. Box 1671, Johannesburg, Transvaal, South Africa.

The Standard Oil Company of Indiana has announced that A. L. Conn will be in charge of pilot plants. R. C. Gunness, who is associate director of research for the same company, has supervision over process design. Aldo Minotti, who qualifies as an expert on city planning, has been asked to serve on a committee in Waltham, Mass., to make a thorough investigation of the community's housing and planning needs on a long-range basis. Charles F. Hill has been appointed president of the new firm, Carrier Engineer, Ltd., of Canada and Newfoundland. The firm is a division of the Carrier Corporation, air conditioning and home food-freezer manufacturer. Wilfred D. MacDonnell, assistant superintendent of Open Hearth No. 1 of the Bethlehem Steel Corporation of Buffalo, N.Y., has been appointed assistant to the general manager of the Lackawanna plant of the same company.

Carleton B. Davis of the Naval Research Laboratory, was presented with the Meritorious Civilian Service Award for outstanding service to the Navy. The citation reads: "For outstanding service in guiding engineers engaged in improving Loran and communications transmitters, facsimile and telepicture devices, and portable equipment for amphibious operations."

The Reverend Joseph A. Hahn, Maryknoll missionary, is now carrying forward his work near Cobija, Bolivia. He says: "There is a great deal of work to be done in this part of Bolivia. These people need help, both in mind and soul. Better transportation would solve the problem. Modern equipment would make the building of a one-lane concrete highway through the

jungle fairly easy. With better means of transportation the health and economy of this region would improve greatly. The use of airplanes would be a big help for the missioners. The airplane will come eventually to the jungle, for progress cannot be stayed. The many rivers make seaplane travel quite feasible." Father Hahn is well qualified to make these predictions. He is the only priest who is a member of the Institute of Aeronautical Sciences. He was specializing in airplane stress analysis when he entered Maryknoll to prepare for the priesthood.

We had a pleasant get-together with your Class Agent, Bob Roulston, over the Labor Day week end. He came up from Connecticut, and we sailed from Barrington, R.I., down to Block Island. Bob is with Scovill in Waterbury, Conn. He is in charge of the development and preparation for production of one of their special products.

Mal Stevens is planning a trip altarward. He is engaged to Julia Constance Dwight, daughter of Professor and Mrs. Herbert B. Dwight of Newton. Mal is now on the staff at the Institute. Howard Sharp was married on June 8 to Elizabeth Hendricksen, daughter of Mr. and Mrs. Helmer Hendricksen of Westerleigh, N.Y. The couple will live in Naugatuck, Conn. Howard is head of the manufacturing engineering department of the Bristol Company, Waterbury, Conn. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquicomata, Chile.

1935

Eighty-two fellows met at Heaton Hall in Stockbridge on the week end of September 21 and 22 for a belated but thoroughly successful 10th reunion. At a short business meeting it was decided to increase the number of class officers from two to five in the interest of more active promotion of class affairs. Expressing the belief that the presidency should not be held indefinitely by one man, Walt Stockmayer tendered his resignation, and Jack Colby, our able reunion chairman, was elected to the post. Other officers chosen were Bob Granberg for vice-president, Bart Chapman for secretary, Luke Packard for treasurer, and Ned Collins as representative-at-large.

With business attended to, golf, softball, and "touch" attracted the hardier, that is, web-footed members present. Far from dampening the spirits of the would-be athletes, a fine, steady rain added many laughs, slips, and spills to the afternoon program. To the theme song of "It never rains on the golf course," Jack Orchard mustered ten or a dozen wood and iron wielders, and by a brand of mathematics such as would baffle a nuclear physicist, assigned handicaps to each. Bob Forster came through with low net, while Jack carded a low gross. When last seen, Les Fitz Gibbon, Bill Cross, Al Greenlaw, Dick Shaw, Don Taylor, and the others were still adding, subtracting, integrating, and scratching their more or less thatched heads over their scores.

In softball, Course XV, with the biggest turnout, and Course VI stood all comers. The rain had slicked up the diamond like a Technique Rush pillbox. A hit was worth one or two bases and slides. There were as many as 15 players on a side at times, among them Stocky, Leo Beckwith, Jack Colby, Al Mowatt, Jack Talbert, and Jim Notman, who tried to pitch. Murray Brown and Jack Holley hovered around first. Bob Olsen, Johnny Teasdale, John Taplin, Pete Grant, and Perry Ware kept moving second and third around, as if they weren't hard enough to steer for anyway. Fred Lincoln, Dick Hughes, Art Zich, Ernie van Ham, Bart Chapman, Gerry Golden, Don Morrison, Phil Johnston, and Al Creighton figured as fielders. Gerry Farr was the longest hitter, but lacking a gyrostabilizer, had as much trouble as anyone in rounding the marks. There were differences of opinion about runs and outs per inning, but Course XV and VI claimed the pennant. After the main event, the gang split up for "touch" and a few more innings of softball.

An item on the program was the "Six to Seven — Cocktail Hour." Most of the boys ignored their watches, but it was worth it. The refreshment committee did such a cornucopian job that ample refreshments were still on hand Sunday noon. The banquet was one long to be remembered. A feature of mealtime was the presentation of prizes for athletic prowess and other accomplishments. Irv Banquer won the distinction of being the noisiest; Don Taylor had the biggest appetite. Although Leo Epstein's chin whiskers had passed into limbo sometime earlier, they won him a citation. Then there was a mysterious quintet — Al Greenlaw, Lou Birchall, Bill Lauder, Dud Williams, and Ernie van Ham — who were awarded "jo-joes" for bachelordom. Later counts added five more lone wolves, Chris Rafferty, Jim Eng, Sonny Sundstrom, Dave Dale, and Rufe Applegarth. Someone figured Stocky had the longest engineering hair.

An attendance of 82 is — or approaches — a record reunion, and everyone's enthusiasm was evidenced by a unanimous vote to return to Heaton Hall at the same time for our 15th reunion. Larry Stone, who had suggested the location to the reunion committee, did a real service to the Class. The distance some of the fellows traveled deserves mention. Gerry Feyling set out from Oriente, Cuba, Bill Cross from Neenah, Wis., and Elmer Szantay from Chicago. Johnny Bradner and Carson Brooks came on from Cleveland. The Baltimore and vicinity contingent included Ham Dow, Ed Taubman, Johnny Best, and Al Greenlaw. Bill Brockett and Bud Taft made it from the Wilmington area. Rufe Applegarth, Charlie Ross, and George Bull represented Philadelphia; and Jud Briefer, Lou Birchall, and Al Creighton trekked in from central Pennsylvania.

Bev Dudley, our classmate and Editor of The Review, asked that these notes be compiled in 24 hours; so mention of many fellows and what they are doing has had to be postponed. As your new Secretary, I want to have notes of interest to us all for every issue of The Review and invite you to drop me a line now and then. It is planned to carry on a systematic polling of a few fellows each month, but don't wait to be dunned for dope. A short letter or postal card is enough. — J. BARTON CHAPMAN, *General Secretary*, 7 Lalley Boulevard, Fairfield, Conn.

1936

Our ten-year reunion took place exactly as we predicted; so there is no need of repeating an account of the events. What you are probably waiting to hear is who was there and what they had to say of themselves. I can tell you who was there, but we saw 86 members of our Class at various times during the week end, and you can imagine it was impossible to talk very long with anyone. There were 65 at our Friday stag banquet and including wives, 90 at the Stein-On-The-Table Banquet. As I had expected difficulty in getting from each fellow the information you would be interested in hearing, we passed out questionnaires for each to fill in. In some cases the information given me was very complete; in others, sketchy, to say the least. To pass these revelations on to you without taking up the entire notes section for all the classes, I have had to do some editing for the biographies. But a complete report has been written up and sent to those who answered my request for a dollar for the class treasury. If the following isn't full enough for you, send me that dollar and I'll send you an unexpurgated edition. Below is a list of those who attended at least one of our class reunion activities with the salient and printable facts about them.

Fred Assman spent four years in the Army and is now working as a development engineer for J. T. Baker Chemical Company in Easton, Pa. Before that he was with Ohio Boxboard for four years and National Aniline for one year. He is unmarried. — Jack Austin spent five years in the Army and is now advertising manager for the building materials division of the Flintkote Company, with office in New York City. During the past 10 years he also worked for the First Boston Corporation, Union Carbide and Carbon Corporation, and Case-Sheppard-Mann Publishing Corporation, all in New York. He is divorced and has one daughter, Carolyn. — Art Baker is chief engineer for the Fisk Engineering Company. He is married and has two daughters. — Jim Baker is manager of Baker and Hickman in Madisonville, Ky. He is married and has a boy, Jim, Jr. After completing work at the School of Chemical Engineering Practice, he worked for the Monsanto Chemical Company until this year. — Dan Burns is now assistant engineer of the Nashville, Chattanooga and St. Louis Railway. The last 10 years have been spent on various construction and maintenance jobs. No wife yet. — Joe Burns is a salesman for American Airlines in Boston. He is married and has two little girls. Before taking his present job, he spent two years in construction work, two years in manufacturing, and three years in the Navy.

Hank Cargen is retail sales manager for Sales Affiliates. He is married and has two children, a boy and a girl. — Fred Carten did not provide any biographical data at the banquet, and since I'm not in the mood to look up his history for him even if I could find it, Fred will have to redeem himself by writing a letter full of news. — Gerry Chapman is running the International Press Bureau, which acts as authors' agent. This was Gerry's father's business, and he gave up his work with the Wood Conversion Company to take over the business when

his father died. He is married and has a daughter. The Chapmans are now living in Great Barrington, Mass. — Hank Christensen is president and treasurer of R. H. H. Steel Laundry in Jersey City. He started with this outfit in 1937 and has worked up to his present position. He is married and has a boy and a girl. — Jack Coffin is assistant factory superintendent and plant engineer for the Towle Manufacturing Company, which makes silverware in Newburyport. Except for three years as a radar officer in the Navy, he has been with this concern since 1937. He is married and has a daughter. — Jack Cook promised to write and tell us of his experiences in Russia, but the letter has not yet arrived. He is married and has two children. — Ben Cooperstein is assistant plant engineer for the Raytheon Manufacturing Company in Waltham. Previously, he worked for the Clear Weave Hosiery Stores. He is still a bachelor. — Sid Cornell is a research associate at the Woods Hole Oceanographic Institution. He was a gear engineer with Pratt and Whitney Aircraft in East Hartford until this year. He is married and has a son. — Jim Craig is process service supervisor for the Linde Air Products Company in Boston. He has been with Linde continuously since graduation. He is married and has three children, two boys and a girl. — Bill Cresswell is chief analyst for Ranger Aircraft Engines in Farmingdale, L.I. He is married and has a son and daughter. — George Crummey is a sales engineer with Wheelock Lovejoy and Company, purveyors of steel. He is married and has two sons and a daughter.

Ed Dashefsky is a design engineer with Fredric Flader in Buffalo. Since leaving school he has worked for Seversky Aircraft, Sikorsky Aircraft, and Curtiss-Wright. He is married and has a daughter. — Elmer Davis is assistant rate engineer for Boston Edison. Previously, he did actuarial work for the Columbian National Life Insurance Company, spent six years in the Army with General Bradley, and took a short course at Harvard Business School. He is married and has a son. — Dick Denton holds all positions from president to janitor in the Optical Film Engineering Company of Philadelphia. He owns the outfit. After completing graduate school, he worked at the General Printing Ink Corporation and at Frankford Arsenal before starting his own business. He is married and has two daughters and a son. — Dana Devereux is with Emerson Engineers in New York City. His previous experience includes work with Lockheed Aircraft and the Army Air Forces as a civilian employee. He is married. — Dick de Wolfe has been with the M. W. Kellogg Company in New York since graduation, working on process design, sales contacts, and plant operation. He is carefree and single.

Gene Eberhard is production manager for Warren Brothers' manufacturing division. His previous experience was in shipbuilding, including four years at the Bath Iron Works, three years at Bethlehem in Quincy, and three at Bethlehem in Hingham. He is married and has one son. — Ed Everett is a process engineer with the M. W. Kellogg Company in New York and has been there since 1937. He is married. — Bill Fingerle is assistant chief engineer of the Link Radio Corporation in New York. He has been with them for the past nine years and is still single. — Wendell Fitch is doing research work in the plastics division of the Monsanto Chemical Company in Springfield. Previously, he had interesting work with the B. F. Goodrich Company, following synthetic rubber all the way along to the production stage. He is married and has two daughters.

Bill Garth is president and treasurer of the Lithomat Corporation in Cambridge. Before getting involved with Lithomat, he worked with various fire insurance companies, finally becoming assistant to the president of the Boston Manufacturers Mutual Fire Insurance Company. He is married and has a son and daughter. — Bob Gillette was in between jobs at the time of the reunion. He had worked for Jones and Lamson in Springfield, Vt., for eight years and for the Submarine Signal Company in Fall River for about a year. He is married and has a daughter and a son. — Mart Gilman is with the General Radio Company in Cambridge. He has been with this outfit since leaving school and for two years was manager of the New York office. He is married and has two sons. — Bernie Gordon was on terminal leave, at the time of the reunion, after three years in the Navy. He had worked with the United States Engineer Corps for four years, had attended Harvard Graduate School and had been with Jackson and Moreland in Boston for two years. He is still singularly happy. — Mal Graves is with the American Machine and Foundry Company in Buffalo. He spent five years in the Army Antiaircraft. He also is still available (single).

Dick Halloran is associated with his father's construction company in Newton and still unmarried. — Jack I. Hamilton is assistant sales manager of the Curtiss-Wright Propeller Division in Caldwell, N.J. He has been with this outfit for eight years. His first two years out of school were spent at Chance-Vought. He is married and has a daughter and a son. — Tony Hittl is an engineer with the Linde Air Products Company in Buffalo. He has been with them since leaving the Institute. The family includes a wife and son. — Hank Johnson is with the Philco Corporation in Philadelphia. He is married.

Alice Hunter Kimball has been devoting most of her time to being Mrs. George E. She has two daughters and a son. During the war she worked part-time on the Columbia University atom bomb project. Her husband is a chemistry professor at Columbia. — Bob King is resident geologist for the Climax Molybdenum Company. He is married and has a son and daughter. — Al Klemka works at the United Shoe Machinery Corporation plant in Beverly. His family includes a wife and two daughters. — Dick Koegler is now with Bell Aircraft in Niagara Falls as project engineer on a five-place helicopter. After graduation he worked for two years for Consolidated in California, then came to Curtiss in Buffalo and worked up to chief of structures. He is still single. — El Koontz is sales engineer for the Reliance Electric and Engineering Company, with office in New York. He has been with the same company since graduation, first in Philadelphia, then Cleveland, Minneapolis, and New York, in that order. He is married and was expecting an addition at reunion time. — Leo Kramer is product development engineer for the Raytheon Manufacturing Company. His previous experience included stretches as instructor at Technology, instructor at Tulane, assistant plant engineer for the American Thread Company in Fall River, and chief engineer for National Fireworks in South Hanover, Mass., and Camden, Ark. He is married and has a son.

Roger LeBlanc is assistant manager for J. J. Moreau and Son in Manchester, N.H., as well as being treasurer of the Acme Realty Company. Before 1939, he had worked for Bucyrus-Erie in Milwaukee and for the Bullard Company in Bridgeport. He married the boss's daughter in 1940 and has two sons and a daughter. — Nick Lefthes has been working for General Electric at the Lynn River Works on aircraft gas turbines. He is married. — Frank Lessard is a sales engineer for the Bethlehem Steel Company in Boston. He has a wife and son. — Larry Lombardi is with Pratt and Whitney in Hartford. His past experience includes work for Glenn L. Martin Company and Curtiss-Wright in Buffalo. He is still single.

August Mackro is with Chance Vought in Stratford, Conn. He has a wife and daughter. — Dave Mathias is practicing architecture as half of the firm of Spence and Mathias in Montreal. He spent four years with the Canadian Army, three of them overseas. He is married and has one daughter, but still finds time to do cross-country ski racing and competitive squash. — Don McMullin is practicing architecture in Boston under the sponsorship of the Clark-Babbitt Industries. He was with the Division of Industrial Coöperation at M.I.T. during the war. His family consists of a wife, a son, and a daughter. — George Moustakis is with General Electric in Lynn working on gas turbines. Before 1941 he was with Sylvania. He is married and has two daughters. — Paul Mulkern is with Raytheon in Waltham as head of production engineering. Previously, he has worked for American Airlines, Eastern Aircraft, and the Radiation Laboratory. He is married and has a daughter. — Phil Norton is with Glenn L. Martin in Baltimore. He is a senior test engineer in the laboratory, and his wife works for the same company.

Frank Parker is with Charles T. Main in Boston, doing design and supervision of heavy construction. Previously, he spent four years with the Engineer Corps. His family includes a wife, two sons, and a daughter. — George Parkhurst is at the Dewey and Almy Chemical Company in Cambridge. He was a captain in the Chemical Warfare Service for three years. He is married. — Mike Paskowski was, at the time of the reunion, a lieutenant commander in the Navy working on underwater ordnance. Before entering the Navy in the fall of 1942, he was a departmental engineer for the Lynn Gas and Electric Company. He is still single. — Dick Patterson is with Charles T. Main in Boston. Previously, he worked with General Electric, with Arthur L. Nelson, Engineers, and with Celanese. He is married and has a son and daughter. — Art Peel was on terminal leave from the Army. Before that he had been with Scovill Manufacturing in Waterbury. He is not married but reported that his "prospects are good." — Larry Peter-

son is supervisor of costs in the tube division of General Electric in Schenectady. He is married and has a boy. — Frank Phillips was at the Alumni Day festivities, but unfortunately, I failed to get any biographical information from him. How about sending us a letter, Frank?

George Ray is with Bell Aircraft in Buffalo. He is married. — Scott Rethorst is a scientific consultant for the Army Air Forces. He has been with Columbia Steel, Consolidated-Vultee Aircraft, and Goodyear. He is married. — George Robinson is with Marco Chemicals in New Jersey. He has worked for Hart Products, the F. L. Kaltman Company, and as an instructor for the Army Air Forces Technical School. He is married and has a son. — Elliott Robinson is working at Technology in the Division of Industrial Coöperation. Up until about a year ago, he was with Curtiss in Buffalo. He is married and has a son. — Dick Robinson was at the Alumni Day luncheon, but again I didn't get his biographical information. Would you, too, please send us a letter, Dick?

Bob Saslaw is a consulting engineer in dielectric heating with office in New York City. He got his experience at General Electric in Pittsfield and at Federal Telephone and Radio in Newark. He is married. — Bill Saylor is a sales engineer at General Radio in Cambridge. His other experience includes teaching at the Institute and application engineering with General Electric in Philadelphia. His family includes a wife, a son, and a daughter. — Bus Schliemann is chief of field engineering at Chance-Vought in Bridgeport. He has been with them since graduation. He is married and has two sons. — Dorian Shainin is chief inspector of Hamilton Standard Propellers. He is another who has been with the same company right along. He has a wife, a son, and a daughter. — Warren Sherburne is a naval architect for the Cram Shipbuilding Company in Philadelphia. Previously, he was with the Newport News Shipbuilding Company. He is married and has a son. — Bob Sherman is an instructor in chemistry at Brown University. He has been teaching at Technology and at Phillips Exeter, with a year of research at Harvard. He was married this past June. — Kay Shott was a captain in the Women's Army Corps, stationed at the hospital in Kearns, Utah.

Ariel Thomas is an instructor in sanitary engineering at the Institute. Previously, he was with the Illinois Division of Sanitary Engineering and the United States Army. He has a wife, a son, and a daughter. — Gordon Thomas is assistant general superintendent of the Lummus Company in New York. Previously, he spent four years in the Army. He is married. — Fletch Thornton is industrial engineer for the Birdseye-Snider division of General Foods. At present, Rochester is his headquarters. He spent more than six years with Proctor and Gamble in St. Louis, Cincinnati, and Quincy. He has a wife and two daughters. — Larry Tobey is a peddler for the Norton Company. He has also been with Hollingsworth and Whitney Company and the United States Navy (three years). He is married. — Ange Tremaglio is still putting up all sorts of buildings. He is married and has two children, a boy and a girl. — George Trimble is project engineer with Glenn L. Martin. He is married and has two sons.

Bob van Patten-Steiger is chief chemist of the Alfred Hale Rubber Company. He has been with the Hood Rubber Company, the Sponge Rubber Products Company, Metcalf and Eddy, and the General Tire and Rubber Company. He is married and has a boy. — Phil Vincent is technical director of the Andover Kent plastics division. He has been with Standard Oil, Johns-Manville, Du Pont, and the Manhattan Project. He supports a wife and son. — Milner Wallace is with the Federal Telecommunications Laboratories. He has been with the Radio Corporation of America, Northern Indiana Power, and the Ken-Rad Tube and Lamp Corporation. He is married and has four children, two sons and two daughters. — Hal Weaver is in business with his brother, doing road construction work. He lists himself as president. He has a wife and three children, two girls and a boy. — George Webb is now with Hydrocarbon Research. He has been with the Conewango Refining Company, the M. W. Kellogg Company, and the Kellex Corporation. He has a wife and daughter. — Al Whitcomb has been with the New England Telephone and Telegraph Company throughout except for three years at the Bell Telephone Laboratories. His family consists of a wife and two daughters. — Carl White is a consulting engineer. He has worked for American Optical, American Bosch, Crosby Steam Gage, Raytheon, Polaroid, the M.I.T. Bomb Laboratory, and in business for himself twice before! He is married and has a girl. — Py Williams is plant engineer for the Robertson Paper Box Company. Previously he was with Ohio Boxboard. His family is all girls, four of them, including his wife. — Ed Worthen is in architecture with the firm of Leland and Larsen. He is active on town committees and the planning board of Lexington, and is still a bachelor. — Bill Wu is director of navigation research for the Panoramic Radio Corporation in New York. He has been with Link Radio, Columbia University war research, and the Columbia Broadcasting System, and is not married.

Sorry there isn't room to give you any other news this month. I have several letters I'll have to hold over for next time. — Anton E. Hittl, *General Secretary*, 530 Norwood Avenue, Buffalo 13, N.Y.

1937

Well, fellows, we are starting on another year, which will bring us face to face with our 10th reunion. It hardly seems possible that this event is so near. We should like to get some expressions of opinion from you as to what type of affair you would like and also as to where it should be held and the amount of entertainment, and so on, you would be willing to pay for. At the same time that you send in your preferences, try to include a note about yourself or any of your classmates. Since we last met on these pages, there has been much water over, under, and around the dam, and we'll just try to comb the foam and give you the high spots.

Frank Goddard, who was with Martin in Baltimore, was married there to Jane Thornton. Douglas Carter was married to Erma Erickson in New Britain, Conn., on August 31. George Levy was married to Barbara Sims of Brockton, Mass., on May 30. Donald S. Duncan was married to Jean Paradis of Pleasantville, N.Y., on June 9.

Norman Matthews, who was a lieutenant colonel in the Ordnance at Watertown Arsenal, was appointed works metallurgist of the electro-alloys division of the American Brake Shoe Company last April. They are now completing a new plant at Elyria, Ohio, where, we assume, Norm will be located. — Blake Loring, who was with the Naval Research Laboratory in Washington, was given a meritorious award for outstanding service during World War II, "for the development of new casting alloys and methods of production which greatly alleviated shortages of critical metals." He is at present a nonresident member of the staff at Technology. — William P. McHugh was recently named superintendent of the Cambridge Tuberculosis Hospital.

Gouq-Jen Su has had a most interesting wartime experience in China supplying fuel alcohol to the Chinese Government and to others who are using the Burma Road. The chemical plant was in Kunming, and the alcohol was made from molasses and grain. The very best of the alcohol, he said, was used by the United States Army (but just what use it was put to was not made clear! W. J.). Dr. Su also had a sugar mill and supplied the U. S. Army with sugar. Dr. Su, his wife, and two daughters have recently returned to this country and are now living in Louisville, Ky., where he is studying the Seagram distillery methods in connection with fuel alcohol.

Y. Y. Wu reports that after leaving Technology for China he was connected with work in the Chinese Air Force, where his main job was to make various projects. In addition, he wrote a booklet entitled "A Study on Jap's Deck Pursuit of Model 96," which had been captured and repaired at the Chinese air field. From 1939 to 1945, he joined the National Bureau of Industrial Research of the Ministry of Economics and became chief mechanical designer and chief of the technical office, to make inspections and design projects for different factories of free China at Chungking. When peace came last August, he returned to Shanghai with his wife and child and accepted the invitation of Dr. T. F. Tsiang, director general of the Chinese National Relief and Rehabilitation Administration, to join as senior expert and chief of the technical office for allocation of supplies for rehabilitation.

We have lately received several saddening notices about some of our classmates who were prisoners of war or missing in action and whose status has now been definitely determined. Elmer C. Wirtz, Jr., an Army captain, perished at Cabanatuan prison camp of cerebral malaria in 1942. His remains have recently been located and moved to the United States cemetery in Manila pro tem. We now have definite information that Charles J. Weschler, a lieutenant in the Naval Reserve, gave his life for his country at sea in the Asiatic area aboard a Japanese prisoner-of-war ship on January 16, 1945. Robert F. Haggerty, a major, was being transferred as prisoner of war on a Japanese steamer on December 15, 1944, when the ship was bombed and sunk by one of our planes and Major Haggerty was lost. Lincoln R. Clark, Jr., who fought

with General MacArthur through the Philippine campaign, was a prisoner of war at Cabanatuan until removed and shipped to Japan on December 12, 1945. On December 15 when the boat was bombed in Subic Bay, P.I., by our own Air Forces, Clark was among those who went down with the ship. George T. Breitling, an Army captain, was a prisoner of the Japanese for more than two years, only to be killed by our own Air Forces, in the same accident on December 15, 1944. Max S. Kendzur, an Army lieutenant, has been missing in action since June 15, 1944. He was flight engineer of a B-29 which failed to arrive at its destination on a mission from Chakulia, India, to Hsing-Ching, China. Nothing has ever been heard of the plane nor of any members of the crew. The government has declared a presumptive finding of death as of February 25, 1946. — WINTHROP A. JOHNS, *General Secretary*, 34 Mali Drive, North Plainfield, N.J. PHILIP H. PETERS, *Assistant Secretary*, 7 Kirkland Circle, Wellesley Hills 82, Mass.

1938

These are the first notes since the Stein-on-the-Table Alumni Banquet at the Statler in Boston on June 8. The banquet was a successful one, with an attendance of about two thousand men, but 1938 could boast of only seven members present. Each fellow reported his progress since leaving the Institute. Charlie King, whose address is 19 Garden Drive, Roselle, N.J., is now working for M. W. Kellogg Company in New York; during the war he worked for Kellex on atomic bomb plant design. Charles E. Jahnig, of 788 East Third Avenue, Roselle, N.J., and the development division of the Standard Oil Development Company, Bayway, N.J., worked on the development of fluid solids technique, in which powder is handled almost as though it were a liquid. He says this technique is applied to the catalytic cracking of oils to make high-octane gasoline and raw materials for the manufacture of synthetic rubber. Ascher H. Shapiro, of 26 Lakeview, Arlington, Mass., Assistant Professor of Mechanical Engineering at Technology, worked on the development of high-speed, high-temperature gas turbines for Navy torpedoes during the war. He also did some work for the National Advisory Committee for Aeronautics on special types of power plants for aircraft, but is now getting back to teaching and the normal type of research, specializing in high-speed aerodynamics. Anthony Chemel, of 42 Crescent Street, Cambridge, is employed by Hopkins-Roselund-Parker and Associates, management consultants. During the war he worked at setting up management controls, methods and layout, production control, and wage incentive, in plants producing the proximity fuses and radar safety equipment. During the past five years he has been teaching production control at the Boston Center for Adult Education. He is still single!

David Morse, of 283 St. Paul Street, Brookline, Mass., spent the first three years of the war at Stone and Webster, involved with wiring diagrams and power layouts for several T.N.T. plants, Kankakee in Illinois being the largest. He writes: "I ended my career there doing lighting layouts and some architecture on the Oak Ridge atomic bomb plant. Did we have some wild guesses as to what we were doing! Finally, I went off to the war — finding myself in the Air Forces in communications for a while, then for some time in the air, and finally discharged. I'm now engaged in the practice of architecture with David J. Abrahams and Associates and am waiting for the results of my state exams. I married Geraldine Cohn of New York in February, 1944; we have no offspring." — Edward K. True, of 10 Wood Street, Concord, Mass., writes: "After one year with the Concrete Steel Company of Boston, I joined the staff of the school of architecture at the University of Oregon as instructor of architectural design and construction and had two years there before the war. I then returned to Boston to design structures for synthetic rubber plants for E. B. Badger and Sons. Next, for two years with the Raytheon Manufacturing Company of Waltham, I worked night and day designing radar antennae. September, 1945, saw me take up my present position of assistant professor of architecture at the Harvard University Graduate School of Design. I am still retained by Raytheon as a consulting engineer. I married in 1940 and have two sons."

Dick Muther and his wife have been in Boston this summer. Dick has been teaching in the Business and Engineering Administration Department and showing off his Southern belle, Louise, who is "one in a million and worth waiting for," according to Dick. They were sailing from New York on September 18 for Switzerland, where Dick is going to take a year of advanced study at the University of Zurich. — Ira Lohman has also been in Boston this summer, studying at the Institute. He is leaving early in the fall for St. Louis, where he will be working for the Emerson Electric Manufacturing Company. The Lohmans have a very nice daughter, Linda, who is now almost two years old. — Frank S. Gardner resigned as metallurgist at the Mahwah laboratories of the American Brake Shoe and Foundry Company, where he was conducting research on heat-resistant alloys a few months ago, and took a job as metallurgist in the metals section of the General Electric Company, Pittsfield, Mass. He is engaged in applications and development. — Alfred C. W. Louie reports that he resigned from the William Hunt and Company in Chungking about the middle of 1945 and recently returned to his home in Hong Kong, where he joined the service of the American President Lines in the capacity of Chinese agent. He writes that conditions are becoming normalized in Hong Kong, but that the cost of living is still five to ten times higher than in pre-war days.

The University of Denver has established a school of architecture, the only one in the Rocky Mountain region, and Carl Feiss has been named its director. Before this, Carl had been planning director of the planning commission of the City of Denver. — Bill Bender became engaged last May to Mary Priebe of St. Joseph, Mo. Bill is with the Glenn L. Martin Company in Baltimore and plans to be married in the fall. Leonard Stearns became engaged in June to Frances Ziner of Malden, Mass. After Leonard was graduated from Technology, he received his master's degree at the Missouri School of Mines and Metallurgy. No date has been set for their wedding. John Doremus' engagement to Dorothy Maginnis of Brookline, Mass., was announced in August, and they, too, plan to be married in the fall. Ralph Slutz was married in June to Margaret Mitchell. During the war, Ralph was with the Office of Scientific Research and Development in Washington, London, and Princeton. He received his Ph.D. at Princeton last June. — DALE F. MORGAN, *General Secretary*, Carbide and Carbon Chemicals Corporation, 30 East 42d Street, New York, N.Y. ALBERT O. WILSON, JR., *Assistant Secretary*, 32 Bertwell Road, Lexington 73, Mass.

1941

It would be quite unusual to let another column go by without extending the best wishes of the Class to the recently engaged or married. Lois Krintzman of Worcester is engaged to Bob Alfred; Bob is located back in the Hub after 38 months overseas. Elaine Treitman is engaged to Bill Lifson, formerly a first lieutenant in the Signal Corps, now working with the Standard Oil Development Company in Elizabeth, N.J. Dorothy Whealton is engaged to Bill Compton, a lieutenant commander, now stationed on board the U.S.S. *Franklin D. Roosevelt*. Miss Norma Price became Mrs. John Antenrieth on last April 6. John is a chemist with the Hercules Powder Company. Barbara Kohberger and Bob Totten were married in Pittsburgh in March. Rosamond Gethro of Wellesley College is engaged to Walt Keith, an Army captain. Helen Berry is engaged to Gene Gwaltney, formerly a lieutenant in the Coast Artillery.

News has filtered in of John Fleet, a lieutenant commander in the Navy, receiving the Bronze Star as aerologist on the staff of Rear Admiral F. D. Vagner, covering operations at Roi-Namur, Guam, Leyte, and Lingayen Gulf. Bill Anderson, recently discharged from the Navy, has settled in Sherborn, Mass. Shadburn Marshall has joined the Carnegie-Illinois Steel Corporation as development engineer of steel smelting. Jim McNally is a candidate for the position of library trustee in Dedham, Mass.

From Ivor Collins we hear the following: "I was sorry you couldn't make it to the Class Day doings in February — we really had a good time. The 1941 contingent was largely dominated by Course II men (probably all the others have jobs, you'll say), as you probably have noted from the list of those present. It was really good to get back and look the old place over, too — for me the first time in nearly four years.

"As news from the home front comes a little card from Dot and Bill Fox announcing a daughter, name Dianne Elizabeth, weight 7 pounds 10 ounces, born on April 19. I haven't seen any cigars as yet, though. I spent a week end with Dot and Bill at their place in Baltimore the week before Class Day. They have a nice little apartment, and Bill is still working for Bethlehem in Sparrows Point. While there, we called on Eleanor and Irv Foote, both of whom were on terminal leave (she was an Army nurse), Irv having a good job with a chemical and pigment plant next to the Baltimore airport (no connection, just locating it for the Baltimoreans). I was

surprised at the lack of gray hair and wrinkled brows among the gang in general — they look pretty well preserved, in spite of from one to five years of married life and from one to three youngsters.

"I had a letter from Bob Montana, who, as you correctly state in the latest Review, is in Bogota, N.J. Bob said that he saw Dick Joyce in Meriden, Conn., not long ago, and Dick was starting on a new venture in some sort of a woodworking shop. The latest from Carl Aronsen has him working in the estimating department of Bethlehem's San Francisco outfit — I presume it's a shipyard but wouldn't swear to it. He also casually mentions that he's engaged to a minister's daughter — wonder how he'll look in striped pants?

"As for me, I'm in the engineering department of Frederick Hart and Company here in Poughkeepsie. It's a small firm, the chief line being sound recording and reproducing equipment, with several side lines in other types of special machinery. Quite interesting, and looks as if it would have a good future. Also living where I am is Hans Walz '43, X; so we have a nucleus for an M.I.T. club — any others interested?"

Let us pause in this, our fifth reunion year, and look back over the gulf of the last five years. A number of classmates were present at graduation who are here no longer. The war has taken its toll of M.I.T. '41. It is hard to hold a reunion of this sort without feeling our losses. Again, our literary ability fails us in paying fit tribute to these men who have made the supreme sacrifice: Horace Jonas Adelson, an Army lieutenant, killed in a test flight crash at Wright Field on July 9, 1943; Charnley Kemper Atwater, an Army lieutenant (who finished at Brown University), killed in action on March 19, 1944; John Russel Bird, an Army captain, killed in a plane crash on October 31, 1942; Thomas Colin Campbell, Jr., an Army captain, killed in action on October 21, 1944; James Henry Cooke, an Army lieutenant, who died in a Japanese prison camp at Osaka on August 17, 1943; William Simpson Doughten, an Army lieutenant, the first '41 man known to lose his life in the European invasion, killed on the beaches of Sicily on July 10, 1943; Delavan Dower, an ensign, killed on July 4, 1943; James Hollister Ferguson, a lieutenant in the Marine Corps, killed in a plane crash at El Toro, Santa Ana, Calif., on January 5, 1944; John Cameron Heist, a major in the Army, killed in France on September 2, 1944; Richard Kirk Henry, Jr., an ensign, killed in a plane crash on December 15, 1944; Frank J. Jerome, 3d, an Army lieutenant, lost in the Pacific in September, 1943; Thomas Mitchell Logsdon, a Navy lieutenant, lost over New Guinea on January 7, 1943; John Joseph Nagle, a captain in the Army Airborne Command, killed in the New Guinea area on April 29, 1944; Milton Clark Reeves, a lieutenant in the Field Artillery, killed on November 23, 1943, in Italy; Richard Tague Schaeffer, a Navy lieutenant, killed in action on July 30, 1945; Richard Hutchinson Seabury, electrician's mate, first class, killed in the Pacific area on July 7, 1945; William Milson Shepard, an Army captain, killed in Italy on April 15, 1944; Karawek Serivicharna, a captain in the Royal Siamese Army, killed in Indo-China in 1945; Richard Albert van Tuyl, an Army second lieutenant, killed over Austria on December 28, 1944; Howard Winfield Wade, a lieutenant in the Naval Reserve, killed in an airplane crash at Pensacola on June 15, 1944; Harry Gill Whitman, an ensign, killed on December 15, 1944, in Subic Bay, Philippines; Richard Sampson Wiener, an Army lieutenant, killed in Italy on January 10, 1944. To quote a letter from Philip Fresia — "We of the Alumni of M.I.T., I am sure, will never forget the sacrifices made by these brave men who were called and paid so dearly." — STANLEY BACKER, *General Secretary*, 101 Providence Road, Primos, Pa. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

1942

Still another in the succession of 1942's acting class secretaries takes over as of now. Shep Tyree, now Ph.D. and assistant professor of chemistry at North Carolina (best of luck, Shep), left a plentiful legacy of news, which will make up this column. You fellows must keep it rolling in.

Here is a long letter from Ed Yoder, X, who is at Carbide and Carbon Chemicals in Texas City, Texas. He says he is still single, foot-loose, and fancy-free. In the course of his travels he has picked up a lot of information about '42 men which we quote in part: "Harry Knox is back at the Institute. Mal Anderson married Alice Harvey, and Dan Hulett married Sara Esham. Both girls are Charleston, W.Va., natives, and both couples are living there where Mal and Dan are working for Carbide and Carbon. Harry Blakeslee, a corporal, came from school to work in Charleston, W.Va. He signed up with Westvaco Chlorine Products Corporation, and after a short time was sent to Rahway, N.J., where he was until last fall, when he was drafted into the Army. The last I heard of Ben Skinner, he was working for some radio concern in New Jersey, was married, and had a baby. Carleton Jealous worked in the sales department at Carbide and Carbon, and then went to Oak Ridge, Tenn. He met a local girl and was married and still lives there, I presume. Ernie Artz and Dick Merritt are still moving up in the operating department of Carbide in Charleston, W.Va. They are also still single, as far as I know. Ralph Kelly, Mal Anderson, Dan Hulett, and Gene Hanszen are also in the operating department. John Collins, who was there, recently returned to Medford, Ore., which is his home, to go into business with his brother. Dick Little, II, was in the maintenance engineering department at Carbide. Bob King is still in the design engineering department. Bob McBride is in the gas process development department. Bob is married and has two children."

The Department of Building Engineering and Construction furnishes news of our Course XVII men. Bob Batson of 26 Arlington Street, Brockton, Mass., was married in December, 1943, and has one daughter. After graduation he worked for the Radio Corporation of America until he joined the service. As a Navy lieutenant, he saw service in Brazil and in the Pacific. He is now with Latisteel, Inc. Gordon Hill of 4648 Joana Place, Cincinnati, is married. After release from the Navy as a lieutenant, he expected to enter general contracting in Fort Wayne, Ind. Milton Platt of 36 Highland Avenue, Cambridge, Mass., has been married three years. He received his Sc.D. in Structures last February. James Burns has returned to the Fore River shipyard, Quincy, Mass. He served in the Navy during the war.

Keep the news coming in. — WARREN S. LOUD, *Acting Secretary*, Room 2-272, M.I.T., Cambridge 39, Mass.

1945 (10-44)

For almost all of us today the military life is only a memory. We have joined the pursuit of happiness in a civilian status. For many the first and most important step was to declare their intentions upon the discovery of the woman. Recent betrothals include Howard Boreham to Mignon Wilson; Weston Goodnow, Jr., to Sara Louise Sutton of Skidmore; Stanley J. Pasternak to Nancy Copeland of Emerson; John L. White to Marion Norton; and Edwin Rosenberg to Carol Corn of Wellesley College. Those already married are the former Ellen Lucey of Lasell Junior College and Bob Horsburgh, Jr.; the former Jean Corrin Compton of Connecticut College, daughter of the President of Technology, and Carroll Boyce, Class Agent; the former Marie Adeline Hilton of Katy Gibbs and Robert Klausmeier; the former Barbara Rosemary Reynolds of Wellesley and Bill Kalb; the former Irene Moulaison and Hugh Joseph Menghi; the former Sophia Kuhlmann of Camden and Lewis McKee; the former Joan Galt Lund of Radcliffe and George Butter; the former Carol Chur of Smith and William Ritchie, now a member of the Faculty.

Those of whom we may be proud — are they who, undaunted by the war's interruption of their studies, have returned to earn a degree. Former prisoners of war and now students are Harold Steiner, James Phillips, and Steffen Dieckmann. Bob Hagopian, reported missing in action 20 months ago, is back, too. Stan Brown, George Hetrick, Jim Leonard, John Ahearn, Walter Caldwell, George Keller, John Colton, Alfred Baum, and Robert Crooks are presently upping the competition at the Institute. Mal Crowther, Ted Hellmuth, and Dick Jorgenson have journeyed to Lehigh for their degrees. Among our advanced scholars are Ken Scheid, who will study for his master's degree in industrial relations at Chicago University, and Cort Ames, who will undertake the M.B.A. at Harvard Business.

Others have succumbed to the temptation of a salary. Frank Pohanka, who is a father of one year's standing, is process developing for the Carbide and Carbon Corporation of Galveston, Tex. Dave Reeves is in the employ of Eversharp. George Upton and Lewis McKee are working at Chance Vought, Conn. King Cayce is now a principal administrator of the Rod Cutting Company of Cleveland. And this Secretary is a sales engineer for the Patterson Kelley Company, engineers and manufacturers in New York City.

Many thanks are due Jim Angell, who handled the class affairs of last year almost singlehanded. — JAMES S. MULLHOLLAND, JR., *General Secretary*, 1172 77th Street, Brooklyn, N.Y. *Assistant Secretaries:* RODERICK L. HARRIS, 1 Winchester Street, Brookline 46, Mass.; JAMES B. ANGELL, M.I.T. Graduate House, Cambridge 39, Mass.

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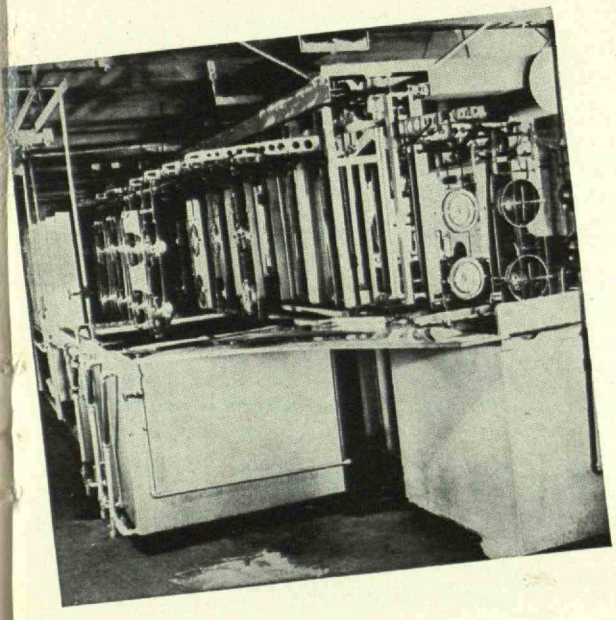

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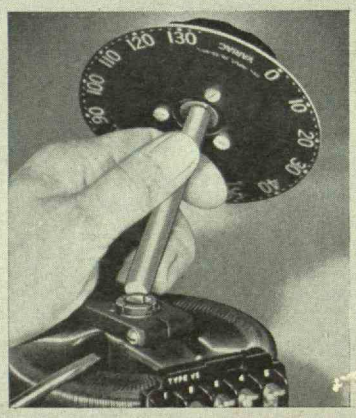

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